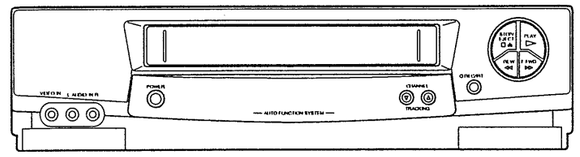
HITACHI

SERVICE MANUAL

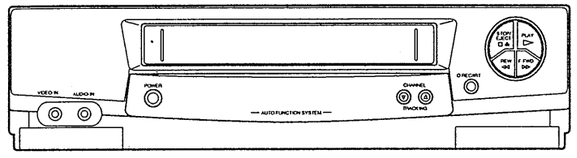
TK | No. 5007E

VT-FX6500A
VT-FX6500AC
VT-MX4530A

Models: VT-FX6500A/FX6500AC



Model: VT-MX4530A



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VHS

This video deck is VHS type video recorder. For proper operation, only the VHS type cassette must be used.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

April 2000 Digital Media Products Division, Tokai

MAIN SECTION

VIDEO CASSETTE RECORDER

VT-FX6500A
VT-FX6500AC
VT-MX4530A

MAIN SECTION

- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA' s

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SPECIFICATIONS

Description	Unit	Minimum	Nominal	Maximum	Condition
1. Video					
1-1 Video Output (PB)	Vp-p	0.8	1.0	1.2	
1-2 Video Output (R/P)	Vp-p	0.8	1.0	1.2	
1-3 Video S/N Y (R/P)	dB	41	44		SP Mode
1-4 Video Color S/N AM (R/P)	dB	35	44		SP Mode
1-5 Video Color S/N PM (R/P)	dB	33	37		SP Mode
1-6 Resolution (PB)	Line	210	230		SP Mode
2. Servo					
2-1 Jitter Low (R/P)	µs		0.05	0.1	SP Mode
2-2 Wow & Flutter (R/P)	%		0.2	0.4	SP Mode
3. Normal Audio					
3-1 Output (PB)	dBV	-10	-6	-2	
3-2 Output (R/P)	dBV	-10	-6	-2	SP Mode
3-3 S/N (R/P)	dB	38	43		SP Mode
3-4 Distortion (R/P)	%		2	4.0	SP Mode
3-5 Freq. response (R/P) at 200Hz	dB	-6	0		SP Mode
(-20dB ref. 1kHz) at 8kHz	dB	-6	-1.5		SP Mode
4. Tuner					
4-1 Video Output	Vp-p	0.8	1.0	1.2	E-E Mode
4-2 Video S/N (S/N Y signal)	dB	40	47		E-E Mode
4-3 Audio Output (1kHz)	dBV	-10	-6	-4	E-E Mode
4-4 Audio S/N (1kHz)	dB	40	46		E-E Mode

Note: Nominal specs represent the design specs. All units should be able to approximate these – some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; In no case should a unit fail to meet limit specs.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1) Wires covered with PVC tubing

2) Double insulated wires

3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation tape

2) PVC tubing

3) Spacers

4) Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector

The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.

Replacement procedure

1) Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector. (Discard it.)

2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Clearance Distance (d) (d')
120 V	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

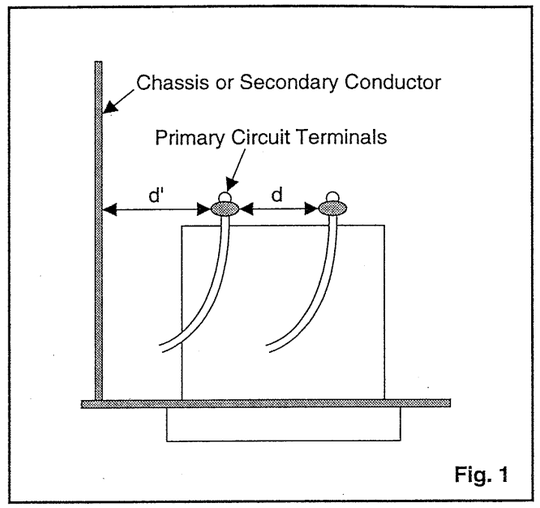


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

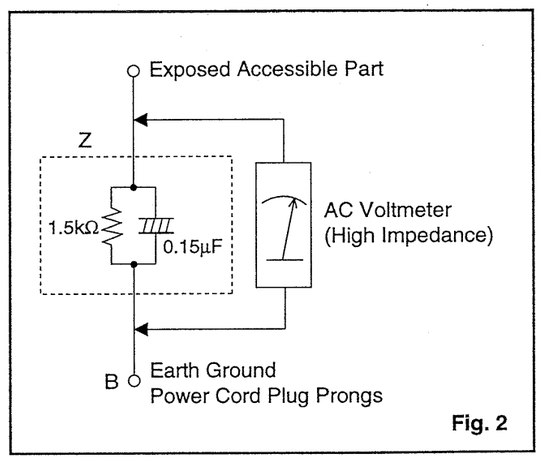


Fig. 2

Table 2 : Leakage current ratings for selected areas

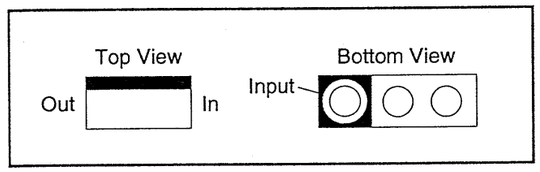
AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
120 V	0.15μF CAP. & 1.5kΩ RES. Connected in parallel	i ≤ 0.5mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

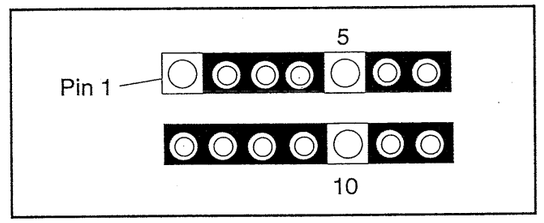
STANDARD NOTES FOR SERVICING

Circuit Board Indications

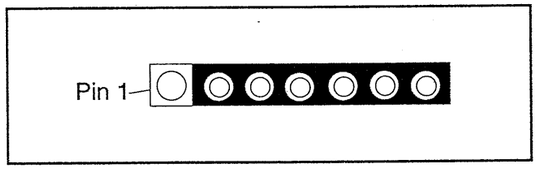
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

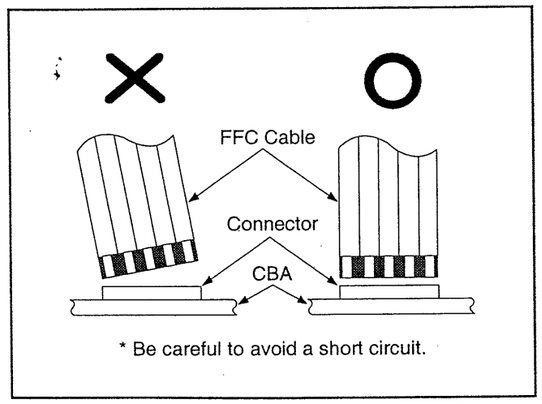


c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



* Be careful to avoid a short circuit.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

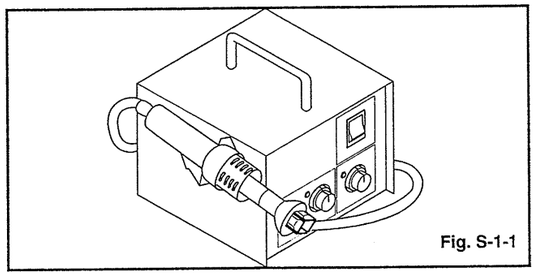


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

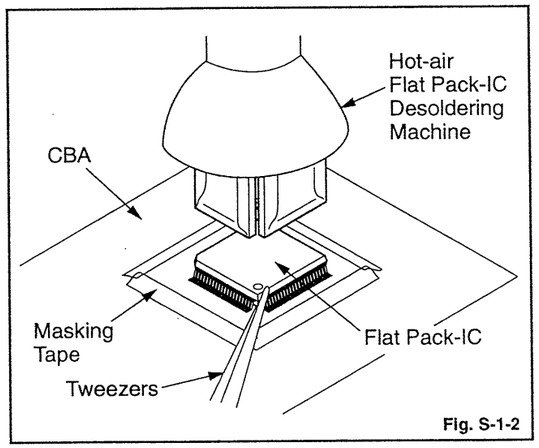


Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

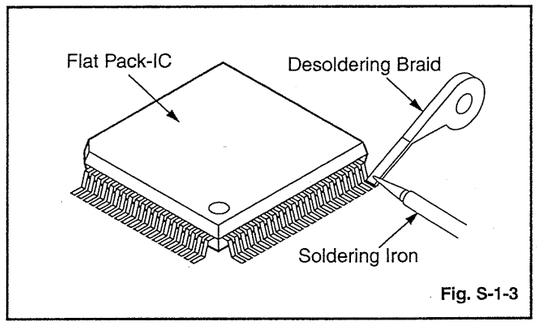


Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

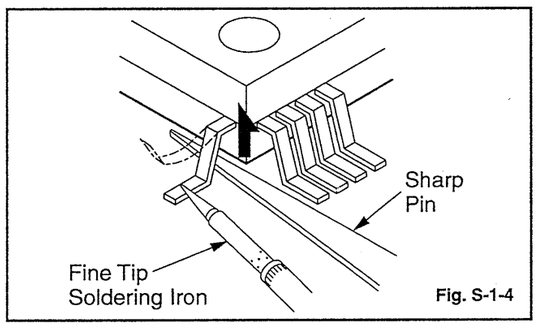


Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

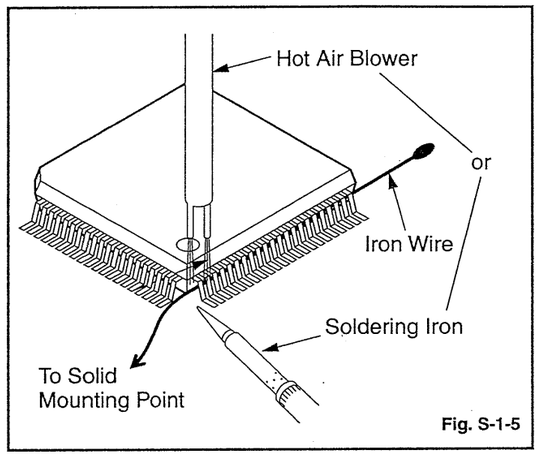


Fig. S-1-5

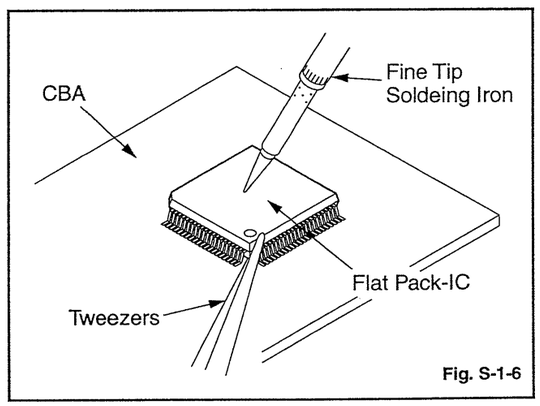


Fig. S-1-6

2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The " ● " mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then pre- solder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

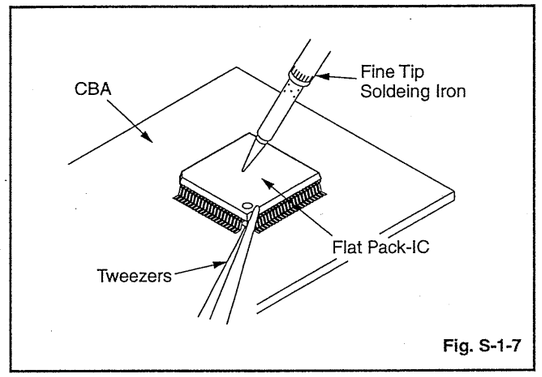


Fig. S-1-7

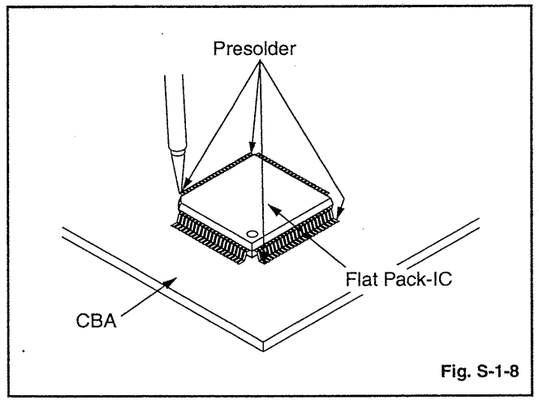


Fig. S-1-8

Instructions for Handling Semiconductors

Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semiconductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors with your clothing.

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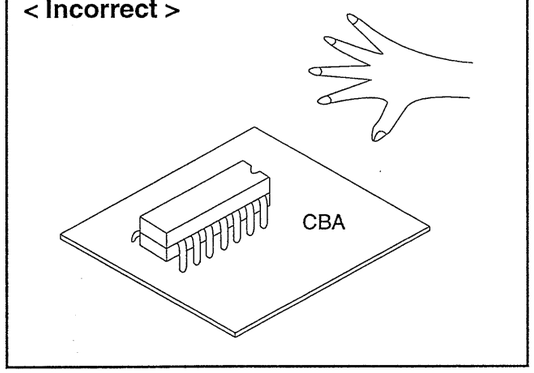

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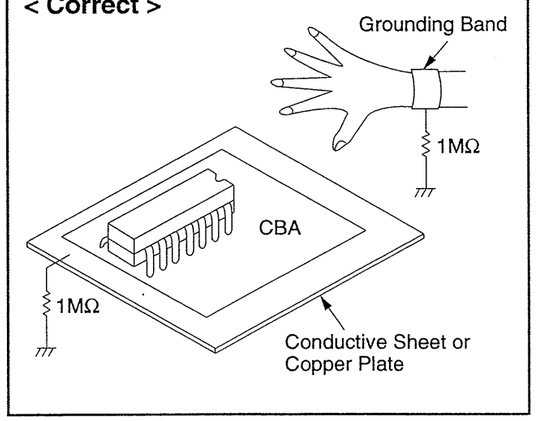


PREPARATION FOR SERVICING

How to Use U21 Deck Extension Cable

(1) Remove the Deck Mechanism Assembly. If needed, remove the Main CBA from the chassis. Refer to "Cabinet Disassembly Instructions" on page 1-6-1.

(2) Connect Main CBA and Deck with the U21 Deck Extension Cable (A) as shown in Fig. 1. And connect Main CBA and Deck with U21 Deck Extension Cable (B) as shown in Fig. 1. Connect a clip on U21 Deck Extension Cable (B) to TP510 on Main CBA.
(U21 Deck Extension Cable: TP12141)

(3) Set SW507(LD-SW) on the Main CBA to Service position as shown in Fig. 1.

Note 1: There are 3 types of U21 Deck Extension Cable (A). They are for 2 Head, 4 Head, and Hi-Fi. Use a connector indicated as shown. Be careful not to let the unused connector contact other parts.

Note 2: Some noise will be present in the playback picture when the extension cable is used.

Note 3: Before installing the Deck Assembly, be sure to align two triangle marks of SW1001 on U21 Deck Extension Cable (B). Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of SW1001, the shaft of Cam Gear with the hole of SW1001 as shown in Fig. 2.

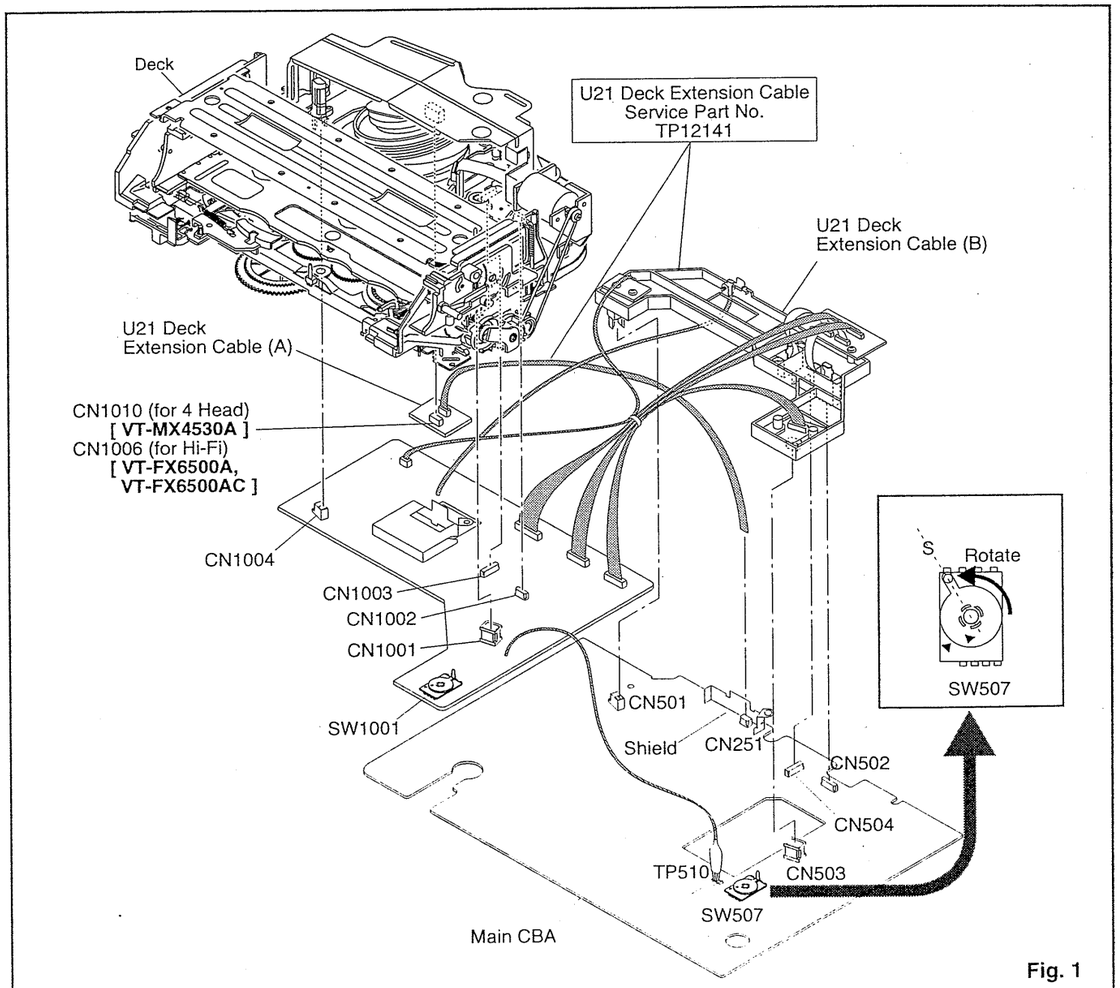


Fig. 1

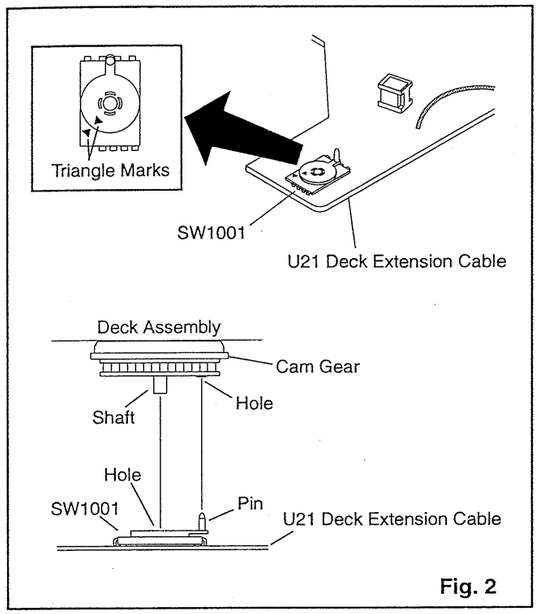


Fig. 2

How to Enter the Service Mode

Note: When the unit is set in the service mode, the display will keep blinking.

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, connect TP502 (SENSOR INHIBITION) to TP501 (GROUND). This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 3.

Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

About REC-Safety Switch

Caution:

The REC-Safety Switch is directly mounted on the Main CBA. When the Deck Mechanism Assembly is removed from the Main CBA for servicing, this switch does not work automatically.

What to do for preparation

In order to record, press the Rec button while pushing REC-SAFETY SW on the Main CBA. See Fig. 3.

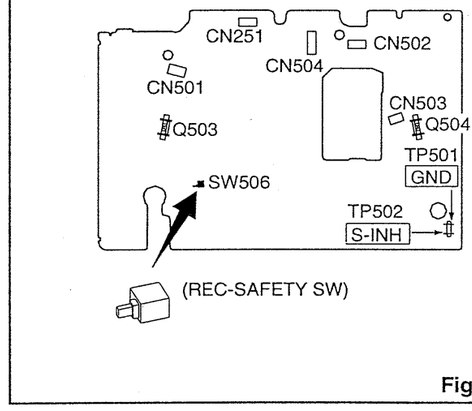


Fig. 3

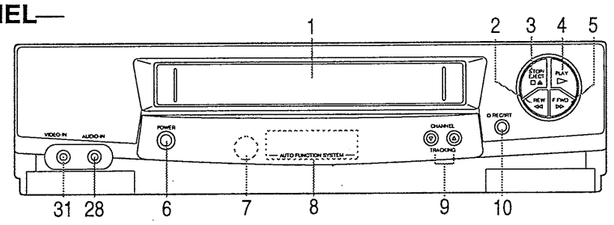
OPERATING CONTROLS AND FUNCTIONS

Model : VT-MX4530A

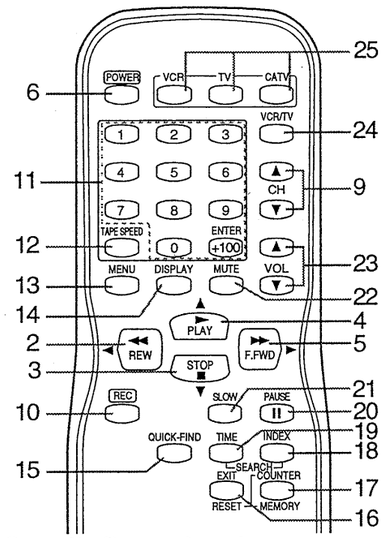
NOTE:

We do not recommend the use of universal remote controls. Not all of the functions may be controlled with a universal remote control.
If you decide to use a universal remote control with this unit, please be aware that the code number given may not operate this unit. In this case, please call the manufacturer of the universal remote control.

—VCR FRONT PANEL—



—REMOTE CONTROL—



1. **Cassette Compartment**
2. **REW button**– Press to rewind the tape, or to view the picture rapidly in reverse during the playback mode. (Rewind Search)

   ◄ button– Press to cancel a setting of timer program. Press to correct digits when setting program (For example: setting clock or timer program). Press to add or delete channel numbers during channel preset. (only on the remote control)
3. **STOP button**– Press to stop the tape motion.

   EJECT button– Press to remove a tape from the VCR. (only on the VCR)

   ▼ button– Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu. (only on the remote control)
4. **PLAY button**– Press to begin playback.

   ▲ button– Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu. (only on the remote control)
5. **F.FWD button**– Press to rapidly advance the tape, or view the picture rapidly in forward during playback. (Forward Search)

   ► button– When setting program (For example: setting clock or timer program), press to determine your selection and proceed to the next step you want to input. Press to determine the setting modes from the on screen menu. Press to add or delete channel numbers during channel preset. (only on the remote control)
6. **POWER button**– Press to turn VCR on and off. Press to activate timer recording.
7. **Remote sensor window**– Receives the infrared signals from the remote control.
8. **Digital display**
9. **CHANNEL(CH) ▲/▼ buttons**– Press to select the desired channels for viewing or recording.

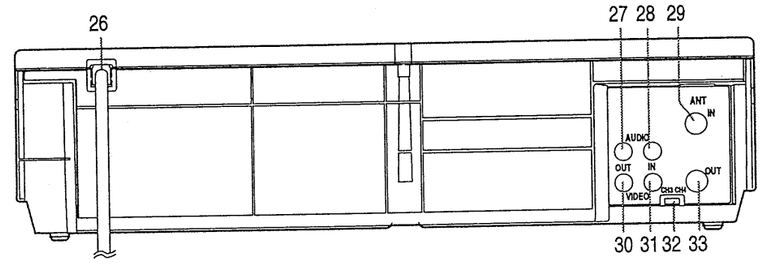
   Tracking function– Press to minimize video 'noise' (lines or dots on screen) during playback (only on the VCR) or slow mode.

   Press to stabilize the picture in the Still mode when the picture begins to vibrate vertically.
10. **REC button**– Press for manual recording.

    IRT button– Press to activates Instant Recording Timer. (only on the VCR)
11. **NUMBER buttons**– Press to select desired channels for viewing or recording. To select channels from 1 to 9, first press "0" button then 1 to 9. (only on the remote control)

Model : VT-MX4530A

—REAR VIEW—



+100 button– When selecting cable channels which are higher than 99, press this button first, then press the last two digits. (To select channel 125, first press "+100" button then press "2" and "5"). (only on the remote control)

ENTER- (only on the remote control)

12. **TAPE SPEED button**– Press to choose the desired recording speed : SP/SLP. (only on the remote control)
13. **MENU button**– Press to display the menu on the TV screen. Press to exit the menu on the TV screen. (only on the remote control)
14. **DISPLAY button**– Press to display the counter or the current channel number and the current time on the TV screen. (only on the remote control)
15. **QUICK-FIND button**– Quick Find mode. (only on the remote control)
16. **COUNTER RESET button**– Press to reset counter to 0:00:00. (only on the remote control)

    EXIT button– Press to exit the menu on the TV screen. (only on the remote control)
17. **COUNTER MEMORY button**– Press to set counter memory on and off. (only on the remote control)
18. **INDEX SEARCH button**– Index Search mode. (only on the remote control)
19. **TIME SEARCH button**– Time Search mode. (only on the remote control)
20. **PAUSE button**– Press to temporarily stop the tape during recording or to view a still picture during playback. (only on the remote control)

    Frame Advance function– Press to advance the picture by one frame at a time during the still mode. (only on the remote control)
21. **SLOW button**– Press to start slow motion playback. The slow speed can be controlled by pressing the F.FWD button (faster) or the REW button (slower). (only on the remote control)
22. **MUTE button**– Press to mute the TV's sound. Press it again to resume the sound. (only on the remote control)
23. **VOL(ume) buttons**– Press to adjust the desired TV's volume level by using either ▲ or ▼ button. (only on the remote control)
24. **VCR/TV button**– Press to select TV or VCR mode. (only on the remote control)

    VCR position: to view playback, to monitor video recordings or watch TV using the VCR tuner.

    TV position: to watch TV or to view one program while recording another.
25. **MODE SELECT buttons**
    (only on the remote control)

    CATV button

    TV button

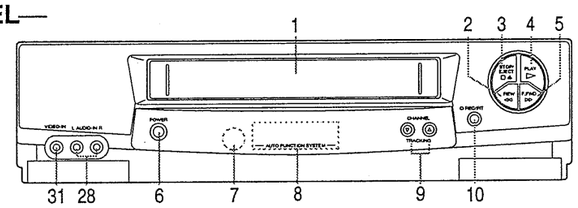
    VCR button
26. **Power cord**– Connect to a standard AC outlet (120V/60Hz).
27. **AUDIO OUT jack**– Connect to the audio input jack of your audio equipment or another VCR.
28. **AUDIO IN jack**– Connect to the audio output jack of your audio equipment or another VCR.
29. **ANT. IN terminal**– Connect to an antenna, Cable system or Satellite system.
30. **VIDEO OUT jack**– Connect to the video input jack of your video camera or another VCR.
31. **VIDEO IN jack**– Connect to the video output jack of your video camera or another VCR.
32. **CH3/CH4 selector switch**– Use to select a video output channel (3 or 4) for VCR playback.
33. **ANT. OUT terminal**– Connects to the antenna input terminal on your TV.

Models : VT-FX6500A / VT-FX6500AC

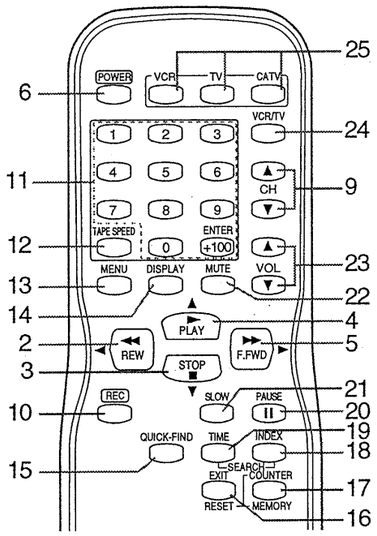
NOTE:

We do not recommend the use of universal remote controls. Not all of the functions may be controlled with a universal remote control.
If you decide to use a universal remote control with this unit, please be aware that the code number given may not operate this unit. In this case, please call the manufacturer of the universal remote control.

—VCR FRONT PANEL—



—REMOTE CONTROL—



1. **Cassette Compartment**

2. **REW button**– Press to rewind the tape, or to view the picture rapidly in reverse during the playback mode. (Rewind Search)

   ◄ button– Press to cancel a setting of timer program. Press to correct digits when setting program (For example: setting clock or timer program). Press to add or delete channel numbers during channel preset. (only on the remote control)

3. **STOP button**– Press to stop the tape motion.

   EJECT button– Press to remove a tape from the VCR.
   (only on the VCR)

   ▼ button– Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu. (only on the remote control)

4. **PLAY button**– Press to begin playback.

   ▲ button– Press to enter digits when setting program (For example: setting clock or timer program). Press to select the setting modes from the on screen menu. (only on the remote control)

5. **F.FWD button**– Press to rapidly advance the tape, or view the picture rapidly in forward during playback. (Forward Search)

   ► button– When setting program (For example: setting clock or timer program), press to determine your selection and proceed to the next step you want to input. Press to determine the setting modes from the on screen menu. Press to add or delete channel numbers during channel preset. (only on the remote control)

6. **POWER button**– Press to turn VCR on and off. Press to activate timer recording.

7. **Remote sensor window**– Receives the infrared signals from the remote control.

8. **Digital display**

9. **CHANNEL(CH) ▲/▼ buttons**– Press to select the desired channels for viewing or recording.

   Tracking function– Press to minimize video 'noise' (lines or dots on screen) during playback (only on the VCR) or slow mode.

   Press to stabilize the picture in the Still mode when the picture begins to vibrate vertically.

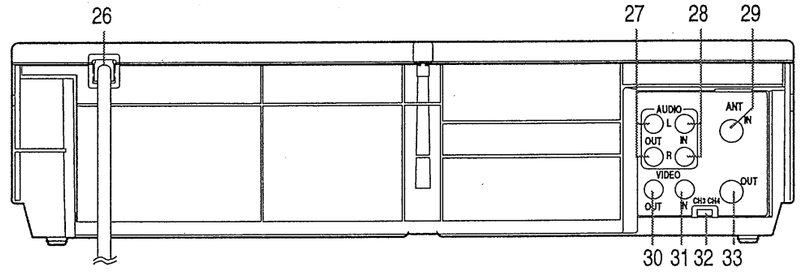
10. **REC button**– Press for manual recording.

    IRT button– Press to activates Instant Recording Timer. (only on the VCR)

11. **NUMBER buttons**– Press to select desired channels for viewing or recording. To select channels from 1 to 9, first press "0" button then 1 to 9. (only on the remote control)

Models : VT-FX6500A / VT-FX6500AC

—REAR VIEW—



+100 button– When selecting cable channels which are higher than 99, press this button first, then press the last two digits. (To select channel 125, first press "+100" button then press "2" and "5"). (only on the remote control)

ENTER- (only on the remote control)

12. **TAPE SPEED button**– Press to choose the desired recording speed : SP/SLP. (only on the remote control)

13. **MENU button**– Press to display the menu on the TV screen. Press to exit the menu on the TV screen. (only on the remote control)

14. **DISPLAY button**– Press to display the counter or the current channel number and the current time on the TV screen. (only on the remote control)

15. **QUICK-FIND button**– Quick Find mode. For more information, please read page 26. (only on the remote control)

16. **COUNTER RESET button**– Press to reset counter to 0:00:00. (only on the remote control)

    EXIT button– Press to exit the menu on the TV screen. (only on the remote control)

17. **COUNTER MEMORY button**– Press to set counter memory on and off. (only on the remote control)

18. **INDEX SEARCH button**– Index Search mode. (only on the remote control)

19. **TIME SEARCH button**– Time Search mode. (only on the remote control)

20. **PAUSE button**– Press to temporarily stop the tape during recording or to view a still picture during playback. (only on the remote control)

    Frame Advance function– Press to advance the picture by one frame at a time during the still mode. (only on the remote control)

21. **SLOW button**– Press to start slow motion playback. The slow speed can be controlled by pressing the F.FWD button (faster) or the REW button (slower). (only on the remote control)

22. **MUTE button**– Press to mute the TV's sound. Press it again to resume the sound. (only on the remote control)

23. **VOL(ume) buttons**– Press to adjust the desired TV's volume level by using either ▲ or ▼ button. (only on the remote control)

24. **VCR/TV button**– Press to select TV or VCR mode. (only on the remote control)

    VCR position: to view playback, to monitor video recordings or watch TV using the VCR tuner.

    TV position: to watch TV or to view one program while recording another.

25. **MODE SELECT buttons**
    (only on the remote control)

    CATV button

    TV button

    VCR button

26. **Power cord**– Connect to a standard AC outlet (120V/60Hz).

27. **AUDIO OUT jacks**– Connect to the audio input jacks of your audio equipment or another VCR.

28. **AUDIO IN jacks**– Connect to the audio output jacks of your audio equipment or another VCR.

29. **ANT. IN terminal**– Connect to an antenna, Cable system or Satellite system.

30. **VIDEO OUT jack**– Connect to the video input jack of your video camera or another VCR.

31. **VIDEO IN jack**– Connect to the video output jack of your video camera or another VCR.

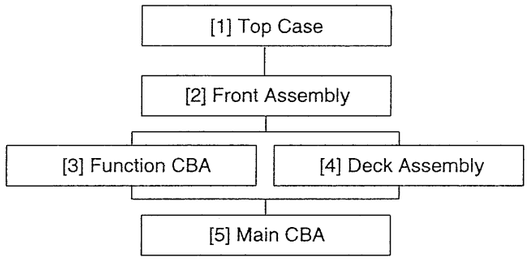
32. **CH3/CH4 selector switch**– Use to select a video output channel (3 or 4) for VCR playback.

33. **ANT. OUT terminal**– Connects to the antenna input terminal on your TV.

CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Top Case	1	3(S-1)	-
[2]	Front Assembly	2	*3(L-1), *4(L-2)	-
[3]	Function CBA	2, 3	*(L-3), *(CN507)	1
[4]	Deck Assembly	4	5(S-2), *(CN251, CN501, CN502, CN503, CN504)	2, 4
[5]	Main CBA	5	2(S-3), *3(L-4)	3
↓ ①	↓ ②	↓ ③	↓ ④	↓ ⑤

①: Identification (location) No. of parts in the figures

②: Name of the part

③: Figure Number for reference

④: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

⑤:Refer to "Reference Notes."

Reference Notes

CAUTION: Locking Tabs (L-1) and (L-2) are fragile. Be careful not to break them.

1. Disconnect Connector (CN507) to remove Function CBA. Hold Main CBA while pulling up on the Function CBA. (Fig. 3)
2. Remove five Screws (S-2). Then slowly lift the Deck Assembly up. Lifting Deck Assembly disconnects five Connectors (CN251, CN501, CN502, CN503, CN504). (Fig. 4)
3. When reassembling the unit, always reinsert three Locking Tabs (L-4), and then reinstall two Screws (S-3). These screws are critical for proper shielding of the Main CBA. (Fig. 5)
4. Before installing the Deck Assembly, be sure to align two triangle marks of LD-SW on Main CBA. Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of LD-SW, the shaft of Cam Gear with the hole of LD-SW as shown in Fig. 6.

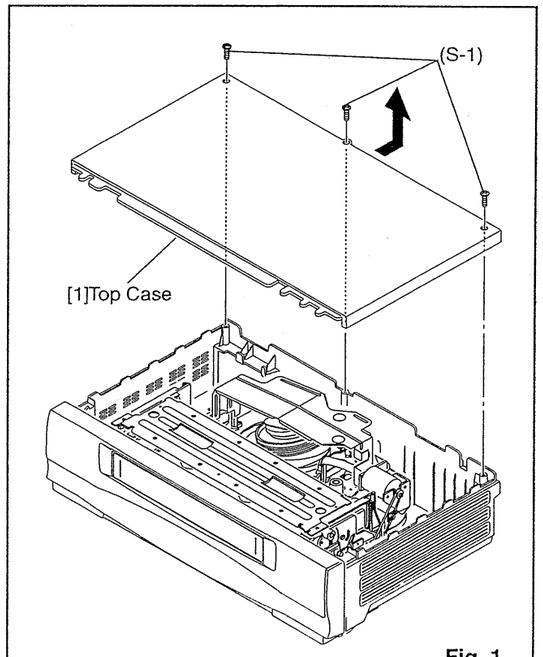


Fig. 1

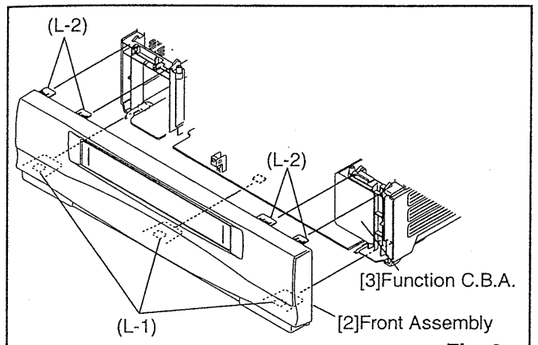


Fig. 2

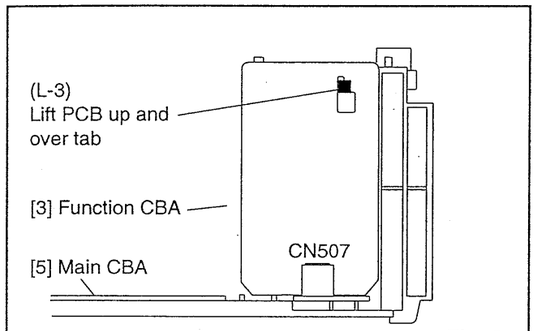


Fig. 3

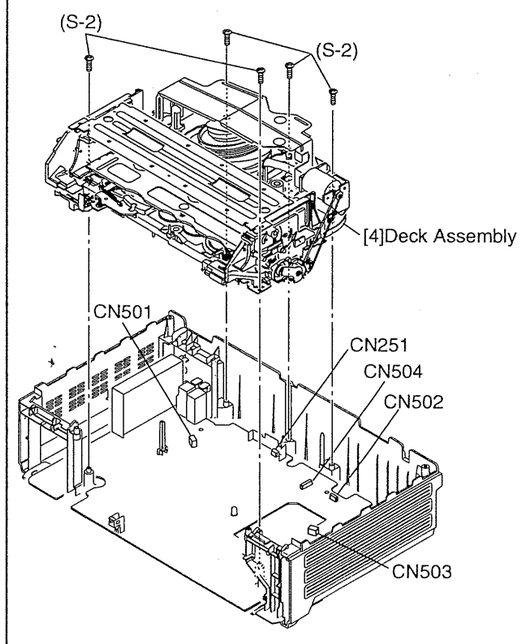


Fig. 4

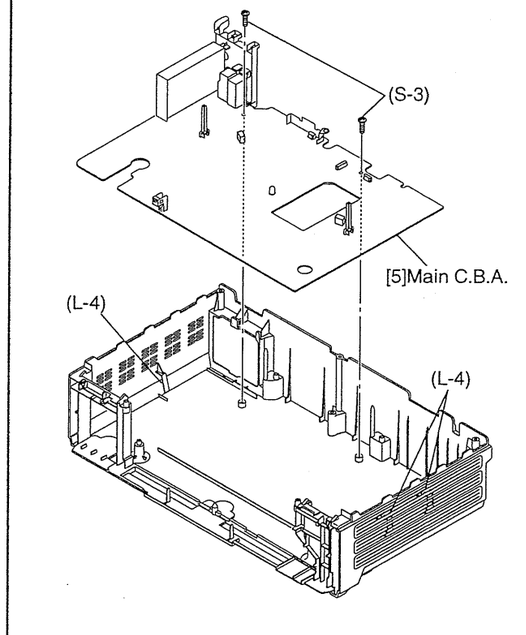


Fig. 5

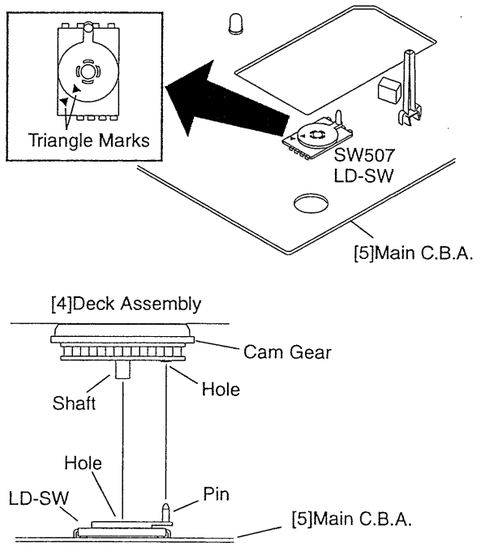


Fig. 6

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly."

NOTE:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either channel "▼" or "▲" button first, then the "PLAY" button (VCR's Front Panel only).

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div., F-Range: DC~AC-20MHz
2. Alignment Tape (MH-1)

Head Switching Position Adjustment

Purpose:

To determine the Head Switching point during playback.

Symptom of Misadjustment:

May cause Head Switching noise or vertical jitter in the picture.

Test Point	Adj. Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) TP501(GND)	VR501 (Switching Point) (MAIN CBA)	PLAY (SP)	----
Tape	**Measurement Equipment**	**Spec.**	
MH-1	Oscilloscope	6.5H±1H (412.7μs±60μs)	
Connections of Measurement Equipment			

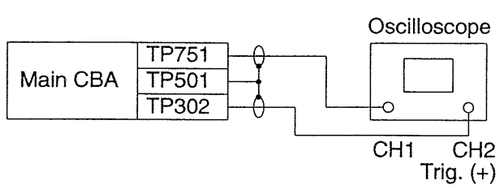
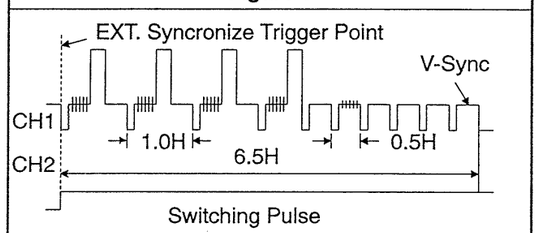


Figure 1

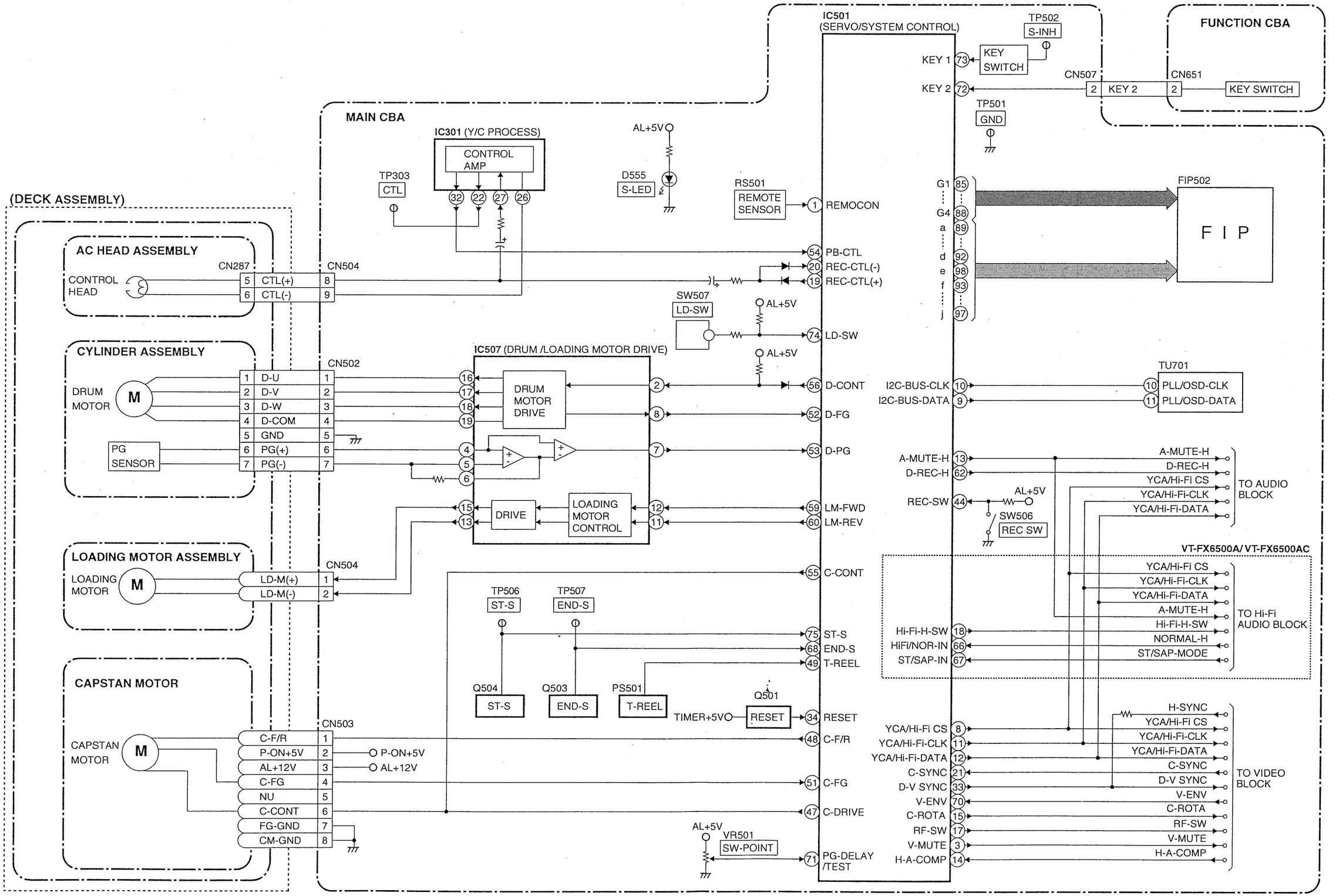


Reference Notes:

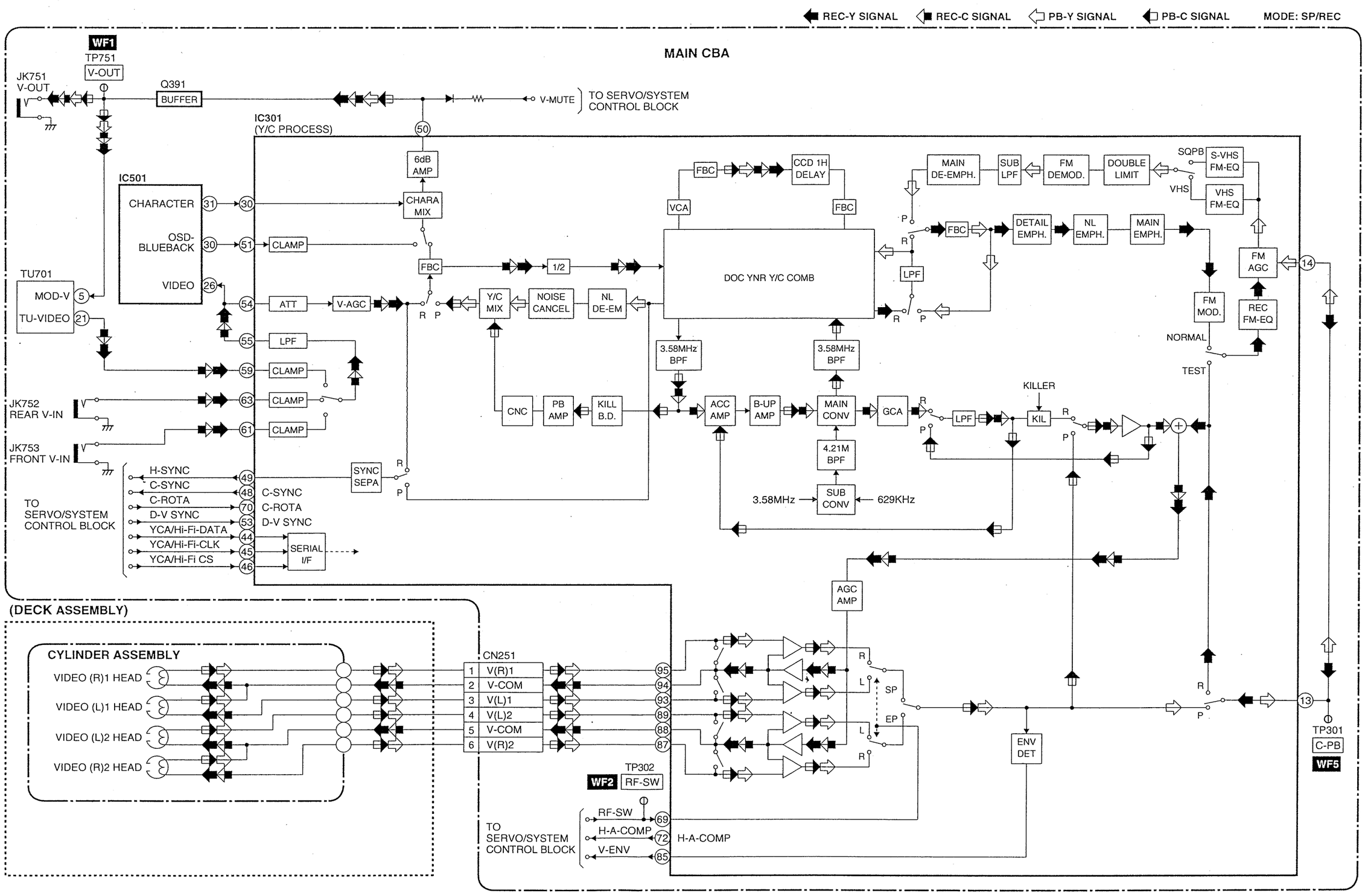
Play back the Alignment tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H(412.7μs) delayed position from the rising edge of the CH2 head switching pulse waveform.

BLOCK DIAGRAMS

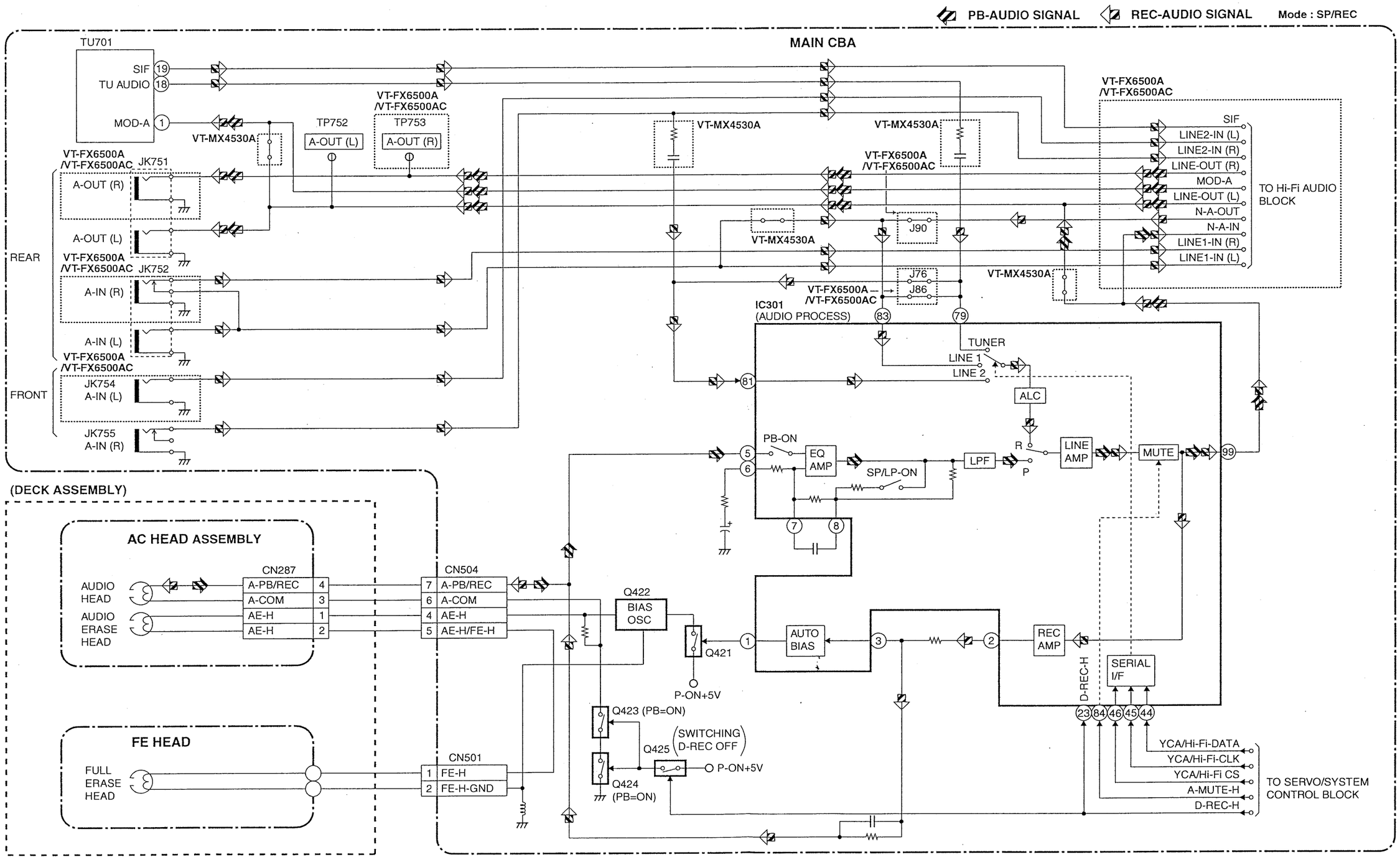
Servo/System Control Block Diagram



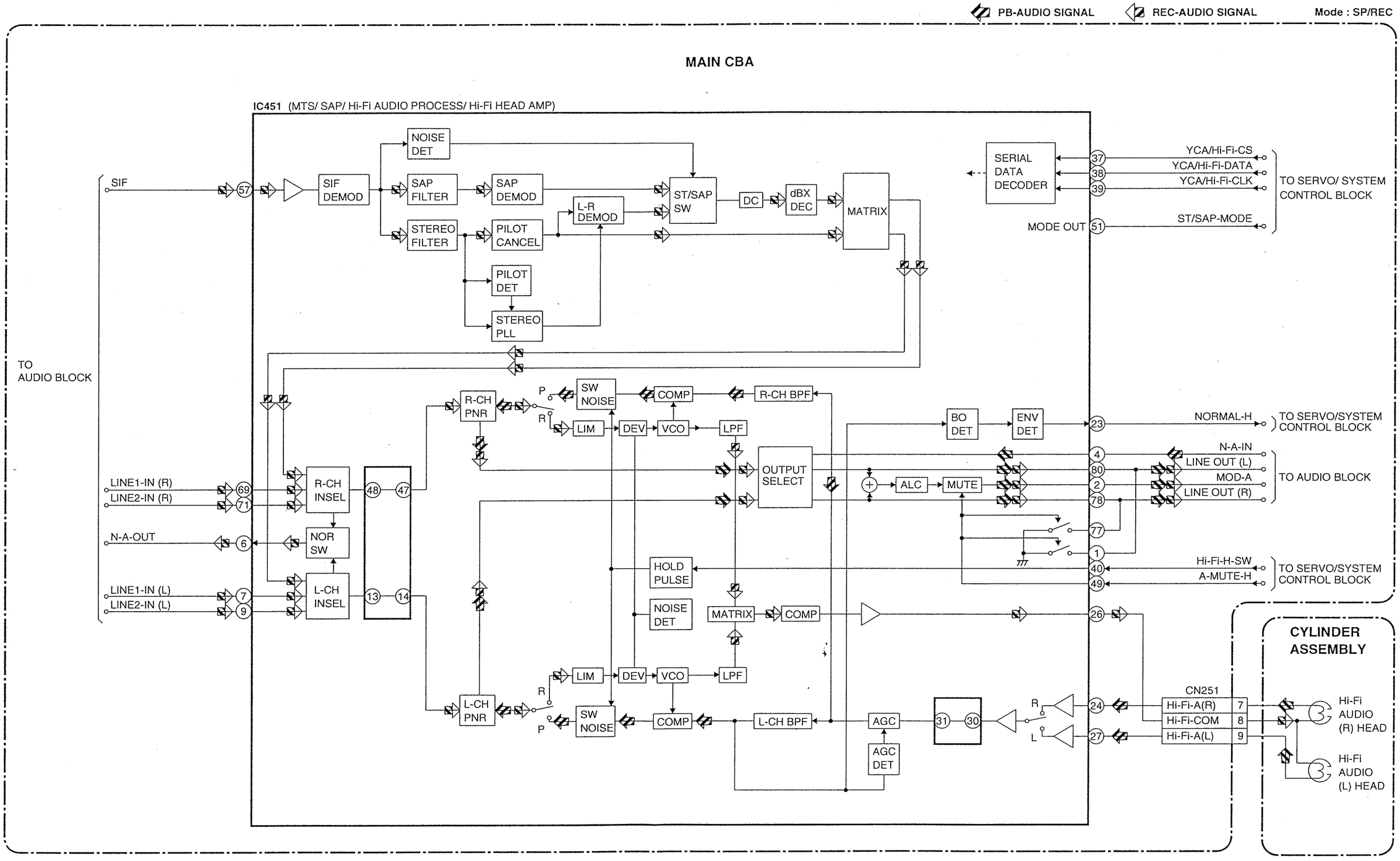
Video Block Diagram



Audio Block Diagram



Hi-Fi Audio Block Diagram (VT-FX6500A / VT-FX6500AC)

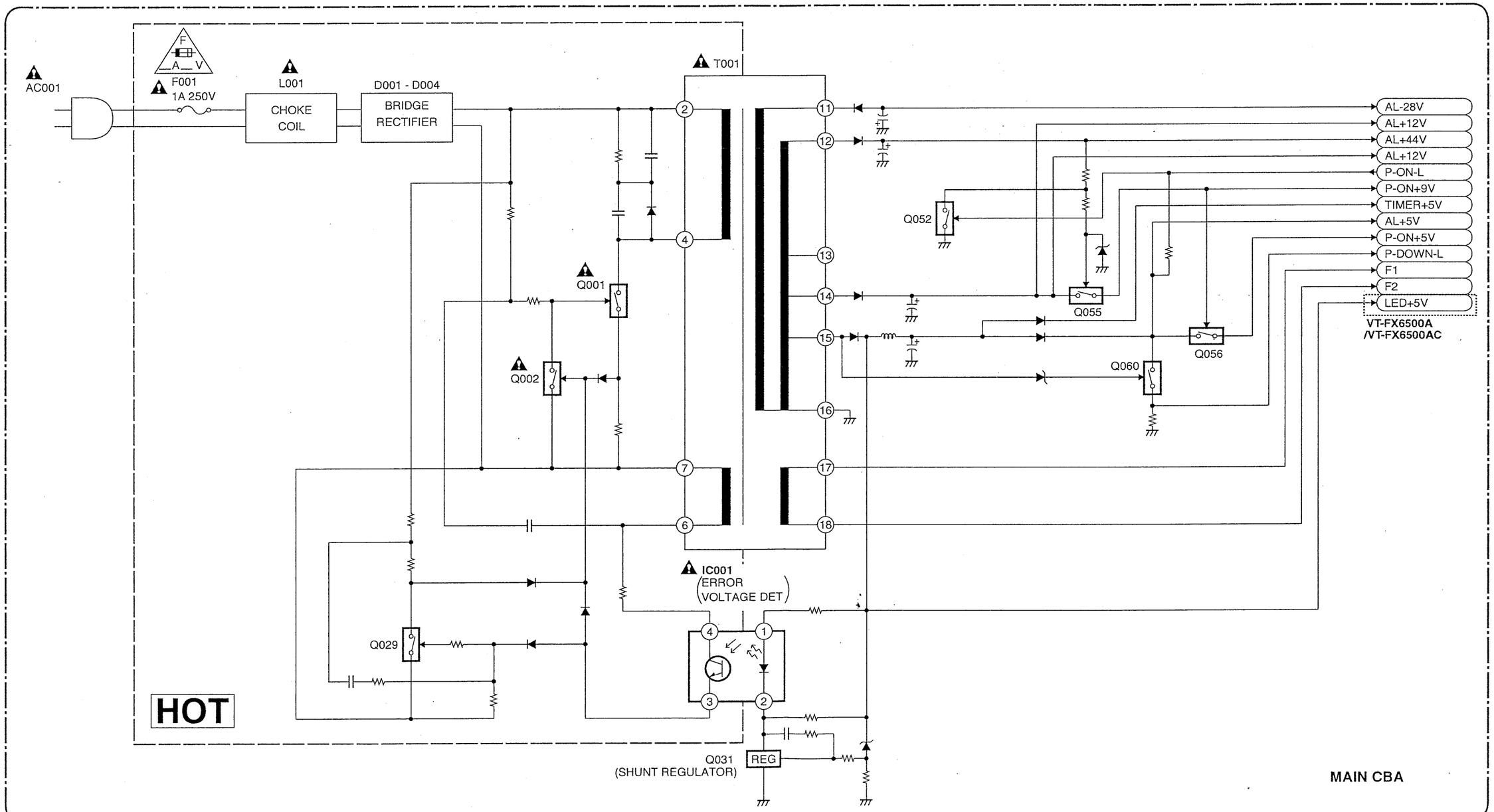


Power Supply Block Diagram

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE -REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

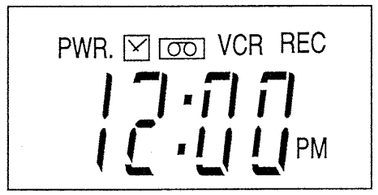


Function Indicator Symbol

Note:

The following symbols will appear on the indicator panel to indicate the current mode or operation of the VCR. On-Screen modes will also be momentarily displayed on the TV screen when you press the operation buttons.

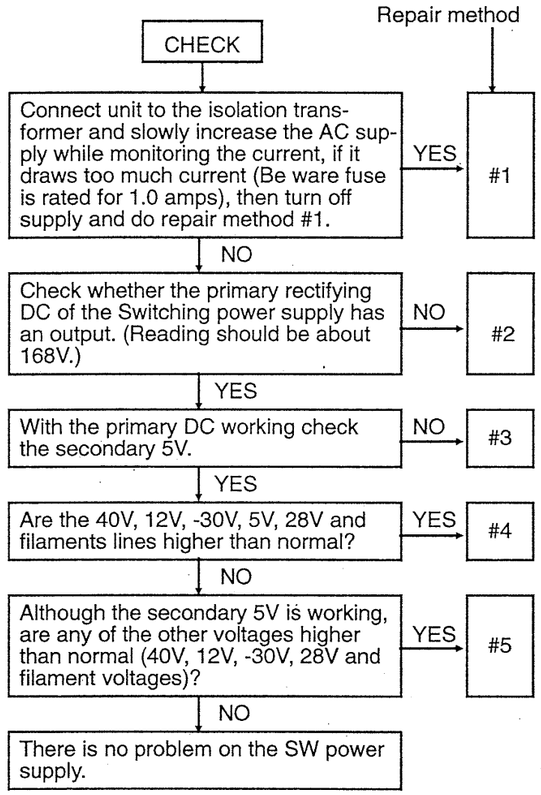
Display panel



LED MODE	INDICATOR ACTIVE	
CASSETTE "IN" CASSETTE "OUT"	"○○ " "○○ "	ON OFF
VCR/TV VCR MODE VCR/TV TV MODE	" VCR " " VCR "	ON OFF
CLOCK	" 88:88 " " PM "	ON ON
POWER ON	" PWR "	ON
REC	" REC "	ON
REC PAUSE	" REC "	Blinks at 0.8Hz interval
T-REC, OTR	" ☑ "	ON (T-REC OFF, T-REC incomplete Blinks at 0.8Hz interval)
When reel and capstan mechanism is not functioning correctly	"○○ " " 1 "	Blinks at 0.8Hz interval
When tape loading mechanism is not functioning correctly	"○○ " " 2 "	Blinks at 0.8Hz interval
When cassette loading mechanism is not functioning correctly	"○○ " " 3 "	Blinks at 0.8Hz interval
When the drum is not working properly	"○○ " " 4 "	Blinks at 0.8Hz interval
S-INH condition	All modes	Blinks at 0.8Hz interval

Power Supply Trouble Shooting Guide

It is highly recommended that a variable isolation transformer which can monitor current be used. (Alternatively a variable AC source which monitors current will do). Read directions below before power is added!


Repair method
CHECK
Connect unit to the isolation transformer and slowly increase the AC supply while monitoring the current, if it draws too much current (Be ware fuse is rated for 1.0 amps), then turn off supply and do repair method #1.
YES
#1
NO
Check whether the primary rectifying DC of the Switching power supply has an output. (Reading should be about 168V.)
NO
#2
YES
With the primary DC working check the secondary 5V.
NO
#3
YES
Are the 40V, 12V, -30V, 5V, 28V and filaments lines higher than normal?
YES
#4
NO
Although the secondary 5V is working, are any of the other voltages higher than normal (40V, 12V, -30V, 28V and filament voltages)?
YES
#5
NO
There is no problem on the SW power supply.

Repair method #1

(Power must be off)

Short circuit in the secondary side. check diode D013 and {(FIP display model only: D012, D014, D015, D016 and D017) or (LED display model only: D014, D015 and D016)}, switching transistor (Q001), control transistor (Q002), diode (D006), and resistor (R014) replace as necessary.

Disconnect 40V diode (D013), 28V diode (D014), 12V diode (D015),
5V diode (D016) and {FIP display model only: -30V diode (D012) and filament voltage diode (D017)}Check the load continuity of 40V line, 28V line, 12V line, 5V line , -30V line and filament voltage line through a tester (resistance range).

If the tester indicates a lower resistance value around 0 ohm, the line is short-circuited.

Before repairing the switching power supply, find out the short-circuited area of such line and repair it.

If the tester does not indicate any low resistance value (around 0 ohm), no load is short-circuited and there is no problem.

2] Check for any defective parts while the secondary rectifying diodes are disconnected (D013, D014, D015, D016 and {FIP display model only: D012 and D017)} perform a diode check in both forward and reverse directions through a tester.

3] Remove the following components and check for defects: snubber diode (D005), switching FET (Q001), source resistor (R014), control transistor (Q002).

Repair method #2

Check the fuse 1.0A (F001), primary rectifying diodes (D001-D004) as possible problems. Remove the above mentioned parts and check them. The circuit which turns on switching FET (Q001) may be regarded as a possible cause, even if the load at the secondary side is shorted, it can't be detected because switching FET (Q001) isn't operating. Perform check according to the step 1 and 2 of repair method #1 and check the following parts:

(Remove the part from PCB)

Switching FET (Q001), source resistor (R014), gate resistor (R008) and start resistor (R004 and R005).

Repair method #3

A circuit to turn on switching FET (Q001) may not work and this may be regarded as a cause of trouble. Even if the load at the secondary side is short-circuited, it cannot be detected because switching FET (Q001) does not turn on. Therefore, perform check according to the steps 1] and 2] of the repair method #1 and execute the under-mentioned parts breakage check.

(Remove the part from PCB.)

switching FET (Q001), source resistor (R014), control transistor (Q002), gate resistor (R008) and start resistor (R004 and R005).

Repair method #4

The feedback circuit which is monitored by the output of voltage may not work and this may be regarded as a possible cause, remove control transistor Q002 and check for defects. More over, a photo coupler (IC001) and transistor (Q031) may be defective, replace any defective parts with factory originals.

Repair method #5

If the output voltage of the secondary side is slightly high, the line load may be in the "OPEN" state and this may be regarded as a cause of trouble. If there is no output voltage on the secondary side, the rectifying diodes (D013), (D014), (D015) and {FIP display model only only: (D012) and (D017)} may be defective.

SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

Warning

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Note:

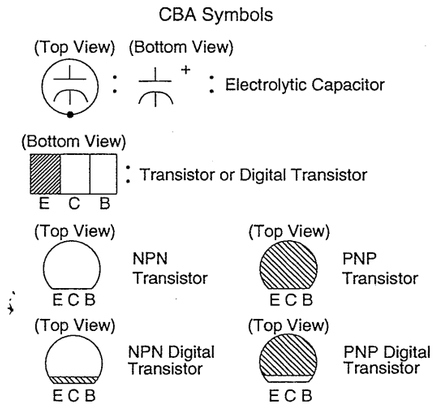
1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All voltages are DC voltages unless otherwise specified.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20℃	-25~+85℃
(F)	+30 -80%	20℃	-25~+85℃
(SR)	±15%	20℃	-25~+85℃
(Z)	+30 -80%	20℃	-10~+70℃

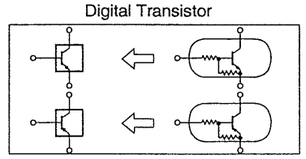
Capacitors and transistors are represented by the following symbols.

CBA Symbols



Schematic Diagram Symbols

Digital Transistor



Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[Resistors]

Item	Indication
Value	No indication ..... Ω K ..... kΩ M ..... MΩ
Power capacitance	No indication ..... 1/4W,1/6W All capacitances other than the above are indicated in schematic diagrams.

[Capacitors]

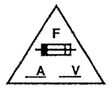
Item	Indication
Value	No indication ..... μF P ..... pF
Dielectric strength	No indication ..... 50V All dielectric strengths other than 50V are indicated in schematic diagrams.

[Coils]

Item	Indication
Value	μ ..... μH m ..... mH

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:**



FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

2. **CAUTION:**

This symbol means fast operating fuse.
Ce symbole représente un fusible à fusion rapide.

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. **Note:**

(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors

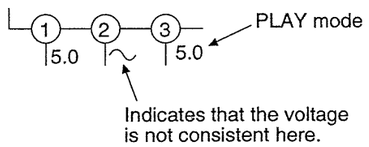
(1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).

(2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Note: Mark "•" is a leadless (chip) component.

6. Mode: SP

7. Voltage indications for PLAY mode on the schematics are as shown below:



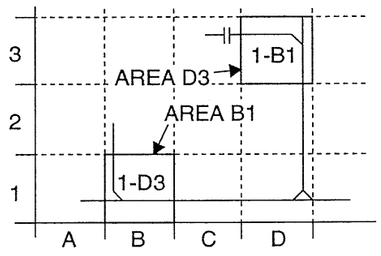
Unit: Volts

8. How to read converged lines

1-D3
- Distinction Area
- Line Number (1 to 3 digits)

Examples:

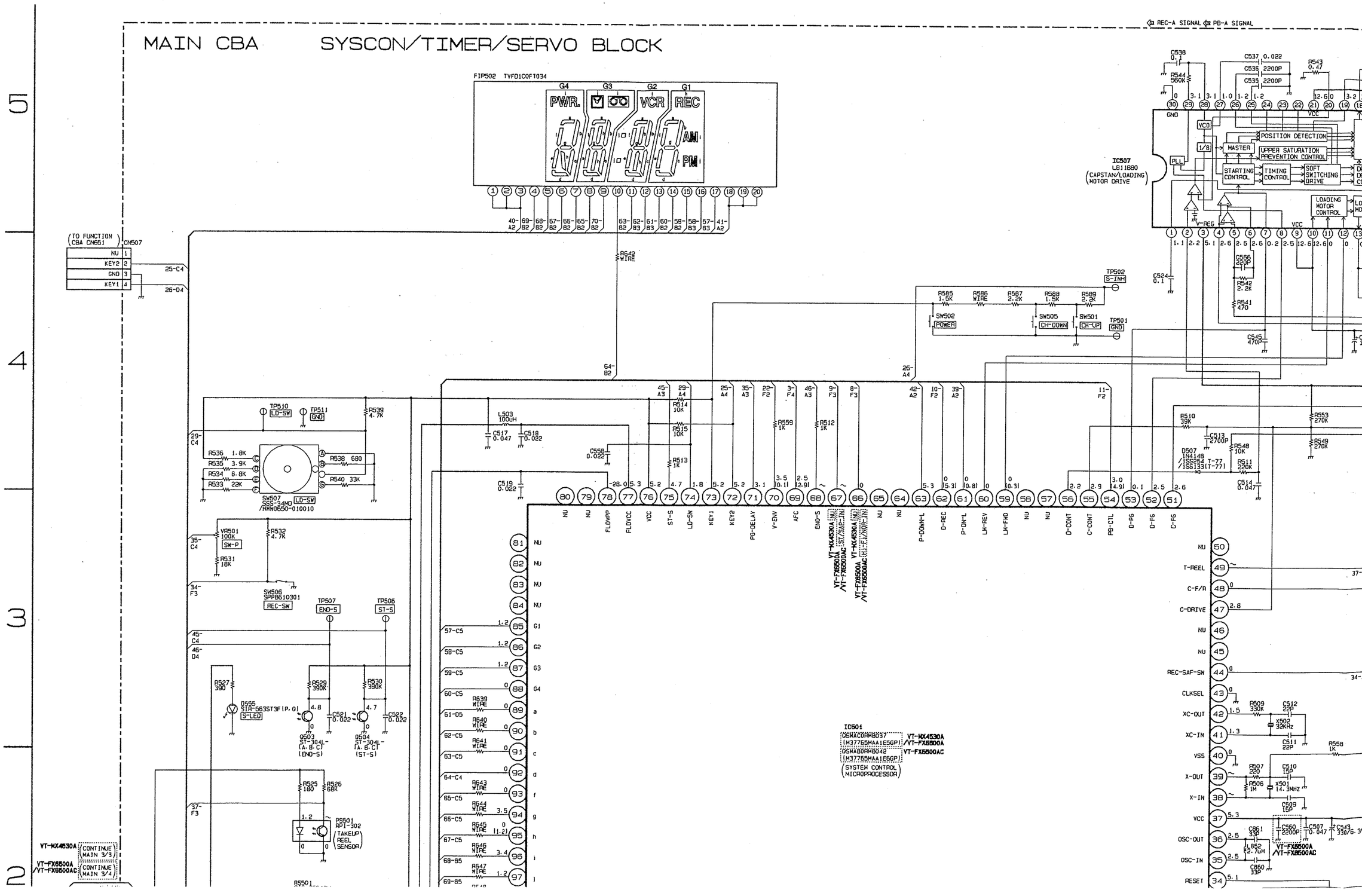
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



9. Test Point Information

: Indicates a test point with a jumper wire across a hole in the PCB.
: Used to indicate a test point with a component lead on foil side.
: Used to indicate a test point with no test pin.
: Used to indicate a test point with a test pin.

Main 1/3 Schematic Diagram (VT-MX4530A)
Main 1/4 Schematic Diagram (VT-FX6500A / VT-FX6500AC)



SERVO BLOCK

REC-A SIGNAL / PB-A SIGNAL

VFD1COFT034 — G4 PWR. / G3 / G2 VCR / G1 REC / AM / PM

IC507 LB11880 (CAPSTAN/LOADING MOTOR DRIVE): VCO, 1/8, PLL, V-REG, MASTER, POSITION DETECTION, UPPER SATURATION PREVENTION CONTROL, STARTING CONTROL, TIMING CONTROL, SOFT SWITCHING DRIVE, DRUM MOTOR DRIVE, DRUM MOTOR DRIVE CONTROL, LOADING MOTOR CONTROL, LOADING MOTOR DRIVE

IC501 (SYSTEM CONTROL MICROPROCESSOR)
- OSWACOFM0803 (M37765MAA1E5GP): VT-MX4530A / VT-FX6500A
- OSWA80FM0842 (M37765MAA1E6GP): VT-FX6500AC

CN502 (TO CYLINDER ASSEMBLY): 1 D-U, 2 D-V, 3 D-W, 4 D-COM, 5 GND, 6 PG(+), 7 PG(-)

CN504 (TO ACE HEAD /LOADING MOTOR): 1 LD-M(+), 2 LD-M(-), 3 GND, 4 AE-H, 5 FE-H, 6 A-COM, 7 A-PB/REC, 8 CTL(+), 9 CTL(-)

CN501 (TO FE HEAD): 1 FE-H, 2 FE-H-GND

CN503 (TO CAPSTAN MOTOR): 1 C-F/R, 2 P-ON+5V, 3 AL+12V, 4 C-FG, 5 NU, 6 C-CONT, 7 FG-GND, 8 CN-GND

CONTINUE MAIN 2/3 — VT-MX4530A
CONTINUE MAIN 2/4 — VT-FX6500A / VT-FX6500AC

AE-H, FE-H-GND, A-COM, A-PB/REC

CONTINUE MAIN 2/3 — VT-MX4530A
CONTINUE MAIN 2/4 — VT-FX6500A / VT-FX6500AC

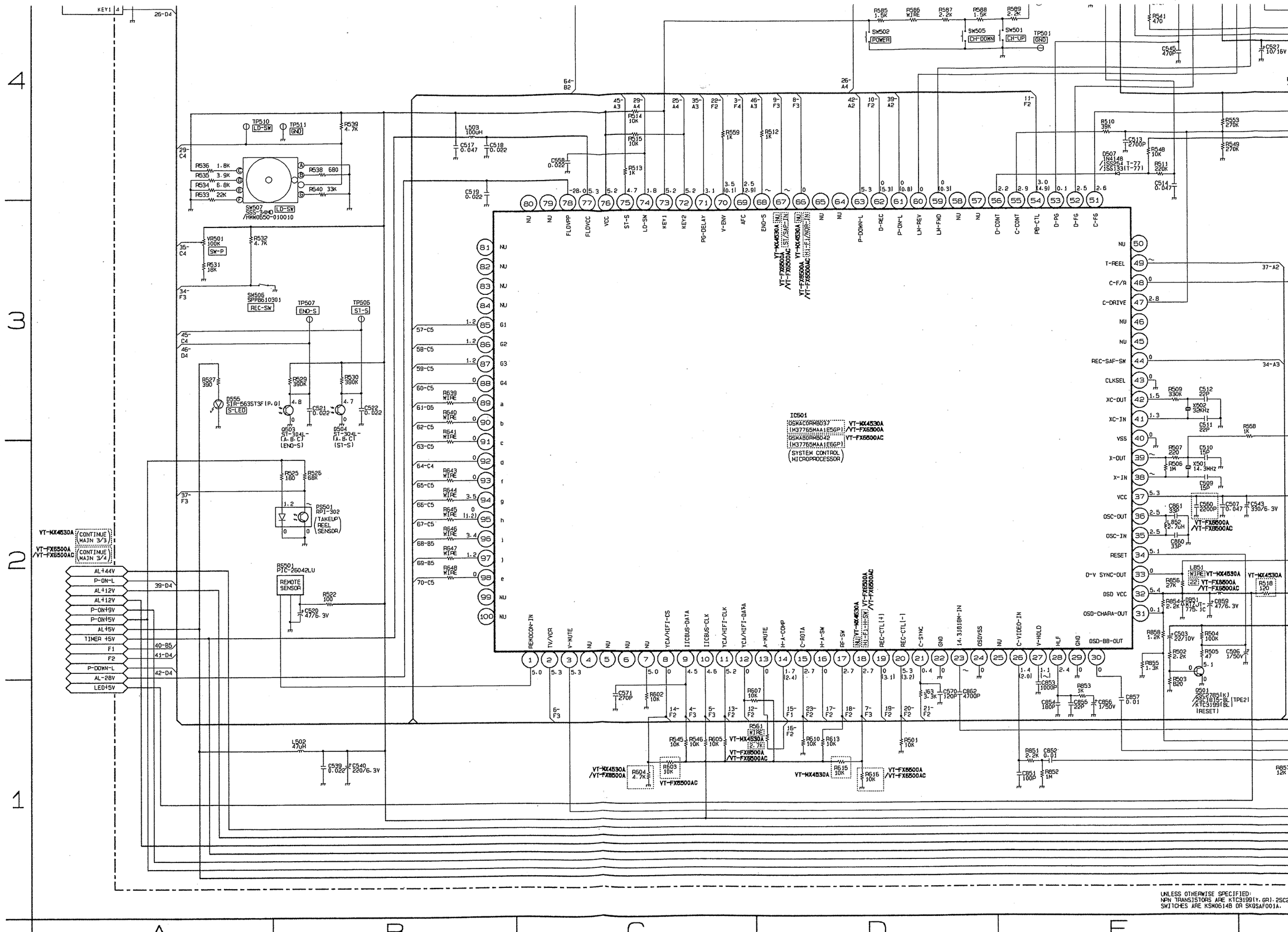
AL+44V, AFC, P-ON+5V, I2C-BUS-DATA, I2C-BUS-CLK, TV/VCR

CONTINUE MAIN 4/4 — VT-FX6500A / VT-FX6500AC

AL+5V, A-MUTE, Hi-Fi-H-SW, YCA/Hi-Fi-CLK, YCA/Hi-Fi-DATA, YCA/Hi-Fi-CS, NORMAL-H, ST/SAP-MODE

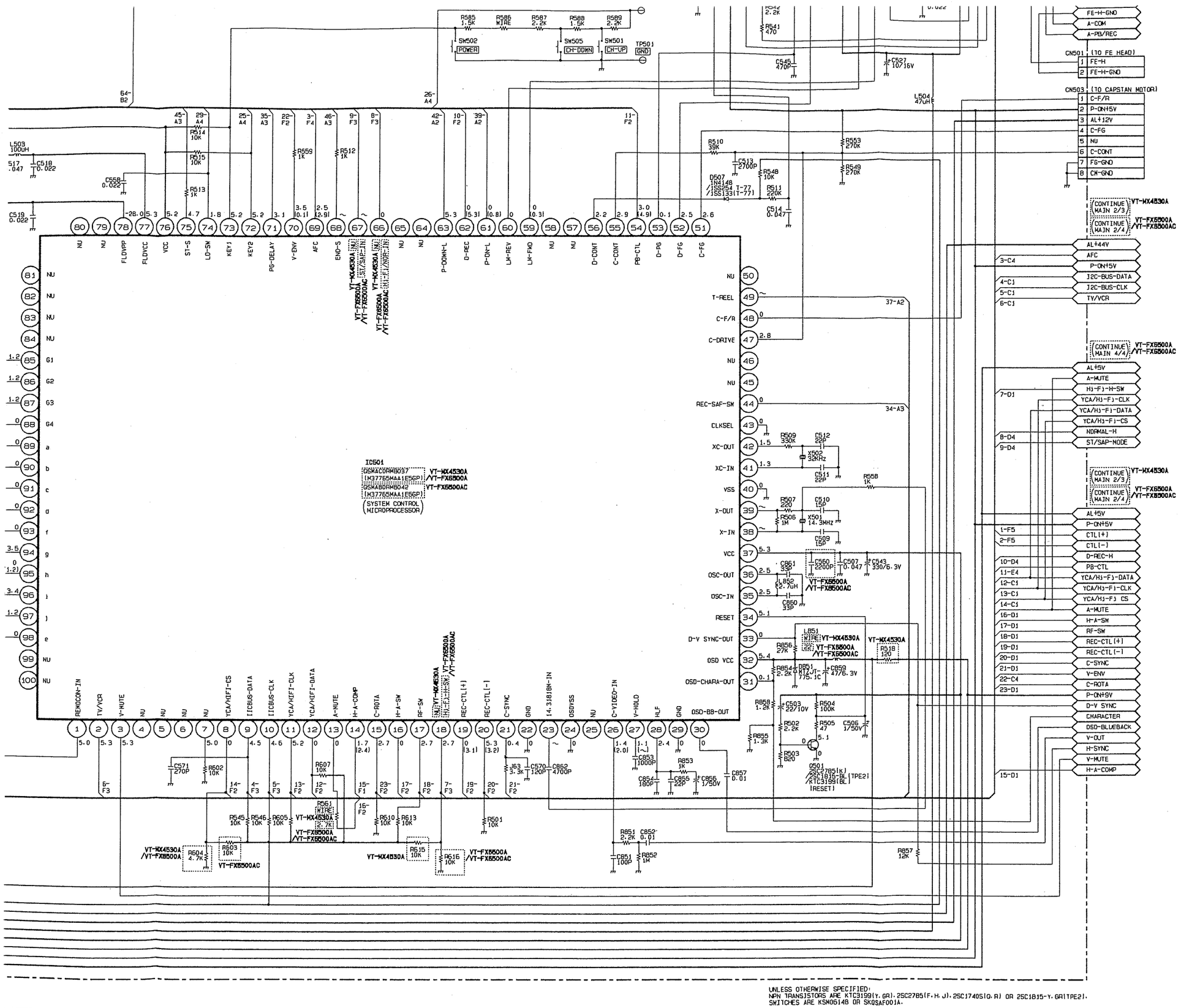
CONTINUE MAIN 2/3 — VT-MX4530A
CONTINUE MAIN 2/4 — VT-FX6500A / VT-FX6500AC

AL+5V, P-ON+5V, CTL(+), CTL(-), D-REC-H, PB-CTL, YCA/Hi-Fi-DATA, YCA/Hi-Fi-CLK, YCA/Hi-Fi-CS, A-MUTE, H-A-SW

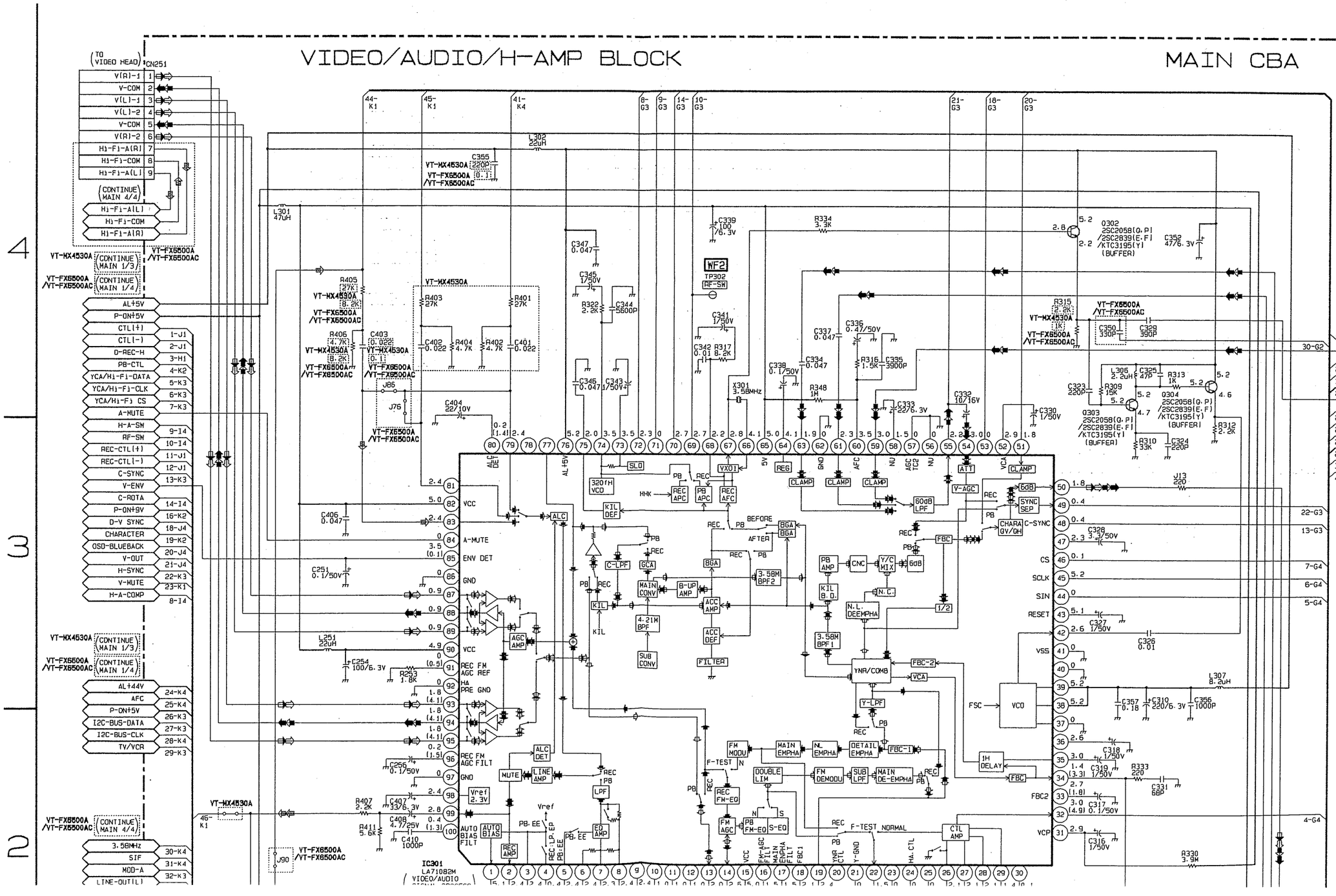

IC501
OSMAC6MMB037
(M37765MAA1E5GP)
OSMA8DMMB042
(M37765MAA1E5GP)
SYSTEM CONTROL
MICROPROCESSOR
VT-HX4530A
VT-FX6500A
VT-FX6500AC
SW502 POWER
SW505 CH-DOWN
SW501 CH-UP
TP501 GND
SW507 SSS-34MO /RMM0650-010010
TP510 LD-SW
TP511 GND
SW506 SPP8610301 REC-SW
TP507 END-S
TP505 S1-S
D555 SIR-563ST3F(P.O) S-LED
Q503 ST-304L- (A.B.C) (END-S)
Q504 ST-304L- (A.B.C) (S1-S)
PS501 RPI-302 /TAKEUP REEL SENSOR
R5501 PIC-26042LU REMOTE SENSOR
CONTINUE MAIN 3/3
CONTINUE MAIN 3/4
AL+44V
P-ON-L
AL+12V
AL+12V
P-ON+9V
P-ON+5V
AL+5V
TIMER +5V
F1
F2
P-DOWN-L
AL-28V
LED+5V
REMCON-IN
TV/VCR
V-MUTE
YCA/HIFI-CS
IICBUS-DATA
IICBUS-CLK
YCA/HIFI-CLK
YCA/HIFI-DATA
A-MUTE
H-A-COMP
C-ROTA
H-A-SW
RF-SW
REC-CTL(+)
REC-CTL(-)
C-SYNC
GND
14.31818M-IN
OSDVSS
C-VIDEO-IN
V-HOLD
HLF
GND
OSD-BB-OUT
OSD-CHARA-OUT
OSD VCC
D-V SYNC-OUT
RESET
OSC-IN
OSC-OUT
VCC
X-IN
X-OUT
VSS
XC-IN
XC-OUT
CLKSEL
REC-SAF-SW
C-DRIVE
C-F/R
T-REEL
P-DOWN-L
D-REC
P-ON-L
LM-REV
LM-FWD
D-CONT
C-CONT
PB-CTL
D-PG
D-FG
C-FG
FLDVPP
FLDVCC
VCC
ST-S
LD-SW
KEY1
KEY2
PG-DELAY
V-ENV
AFC
END-S
NU
L503 100UH
L502 47UH
L852 2.7UH
L851 2.7UH
X501 14.3MHZ
X502 32KHZ
D507 1N4148 /1SS254 T-77 /1SS133(T-77)
D501 2SC2785(K) /2SC1815-BL(TPE2) /KTC3199(BL) (RESET)
D851 MTZJT-7 7.5.1C
VT-HX4530A
VT-FX6500A
VT-FX6500AC
UNLESS OTHERWISE SPECIFIED:
NPN TRANSISTORS ARE KTC3199(Y,GR).2SC2
SWITCHES ARE KSN0614B OR SKQSAF001A.

1-9-3

1-9-4

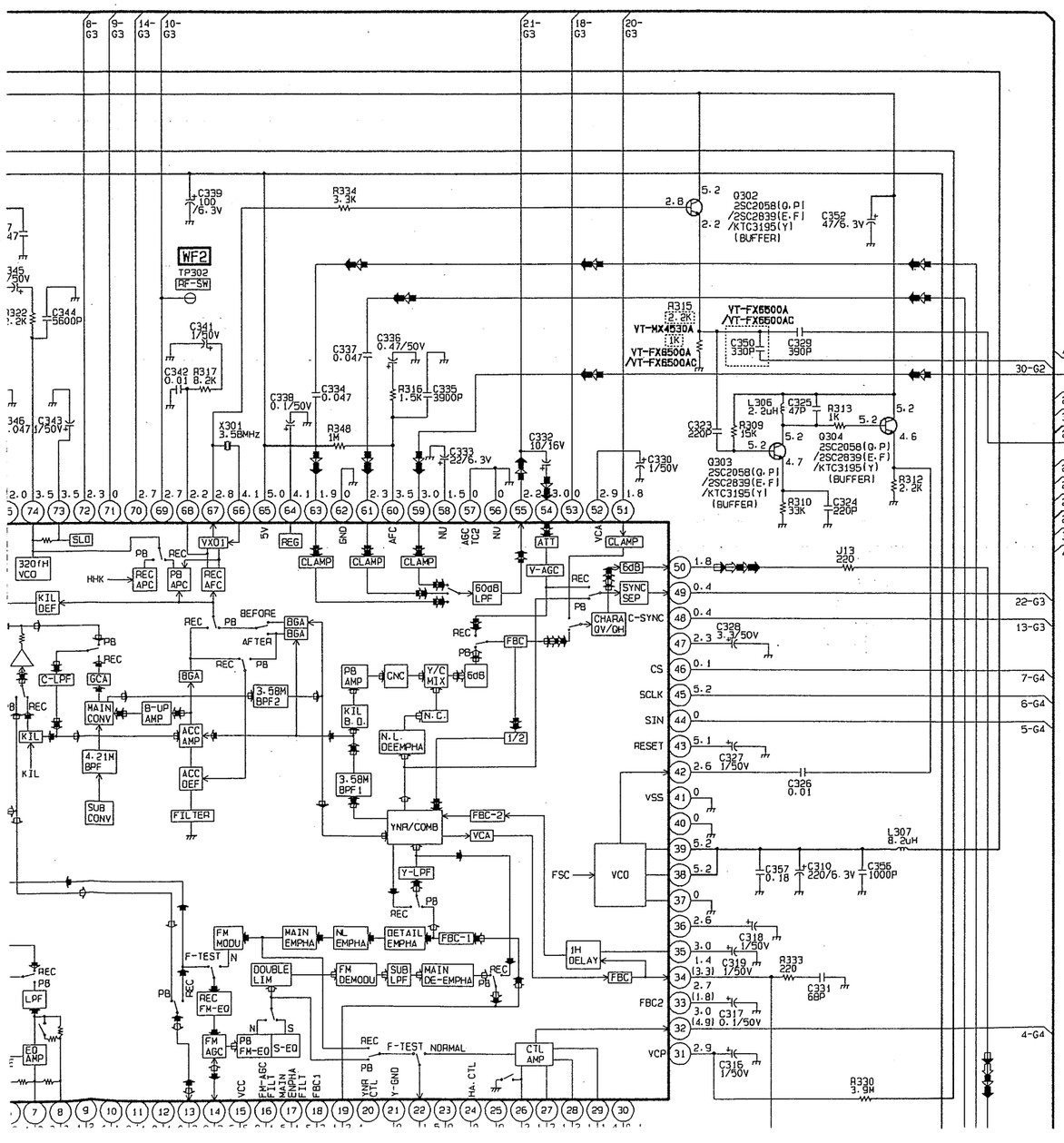

IC501
(SYSTEM CONTROL MICROPROCESSOR)
UNLESS OTHERWISE SPECIFIED:
NPN TRANSISTORS ARE KTC3198(Y, GR), 2SC2785(F, H, J), 2SC1740S(Q, R) OR 2SC1815-Y, GR(TPE2).
SWITCHES ARE KSN0614B OR SKOSAF001A.
C
D
E
F

Main 2/3 Schematic Diagram (VT-MX4530A)
Main 2/4 Schematic Diagram (VT-FX6500A / VT-FX6500AC)



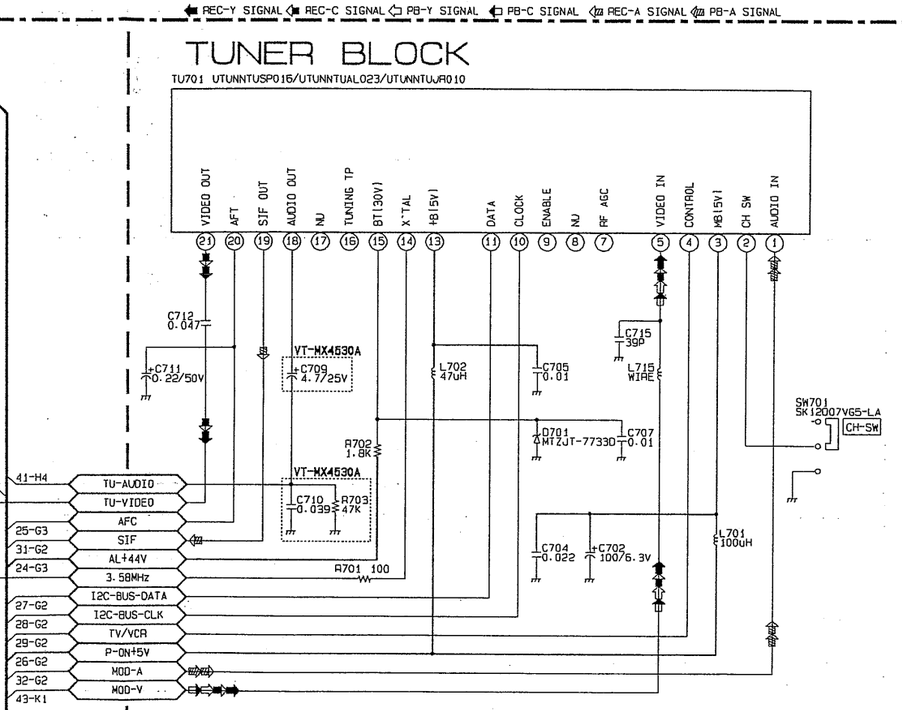
BLOCK

MAIN CBA

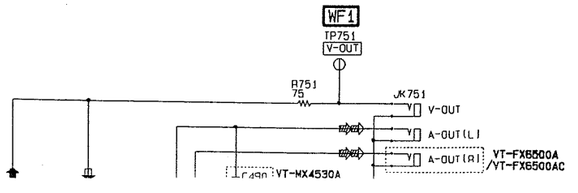


REC-Y SIGNAL REC-C SIGNAL PB-Y SIGNAL PB-C SIGNAL REC-A SIGNAL PB-A SIGNAL

TUNER BLOCK

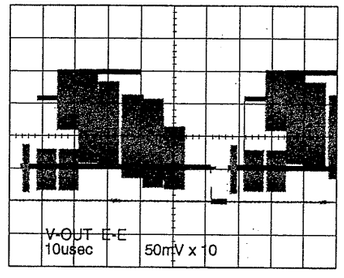


INSEL BLOCK



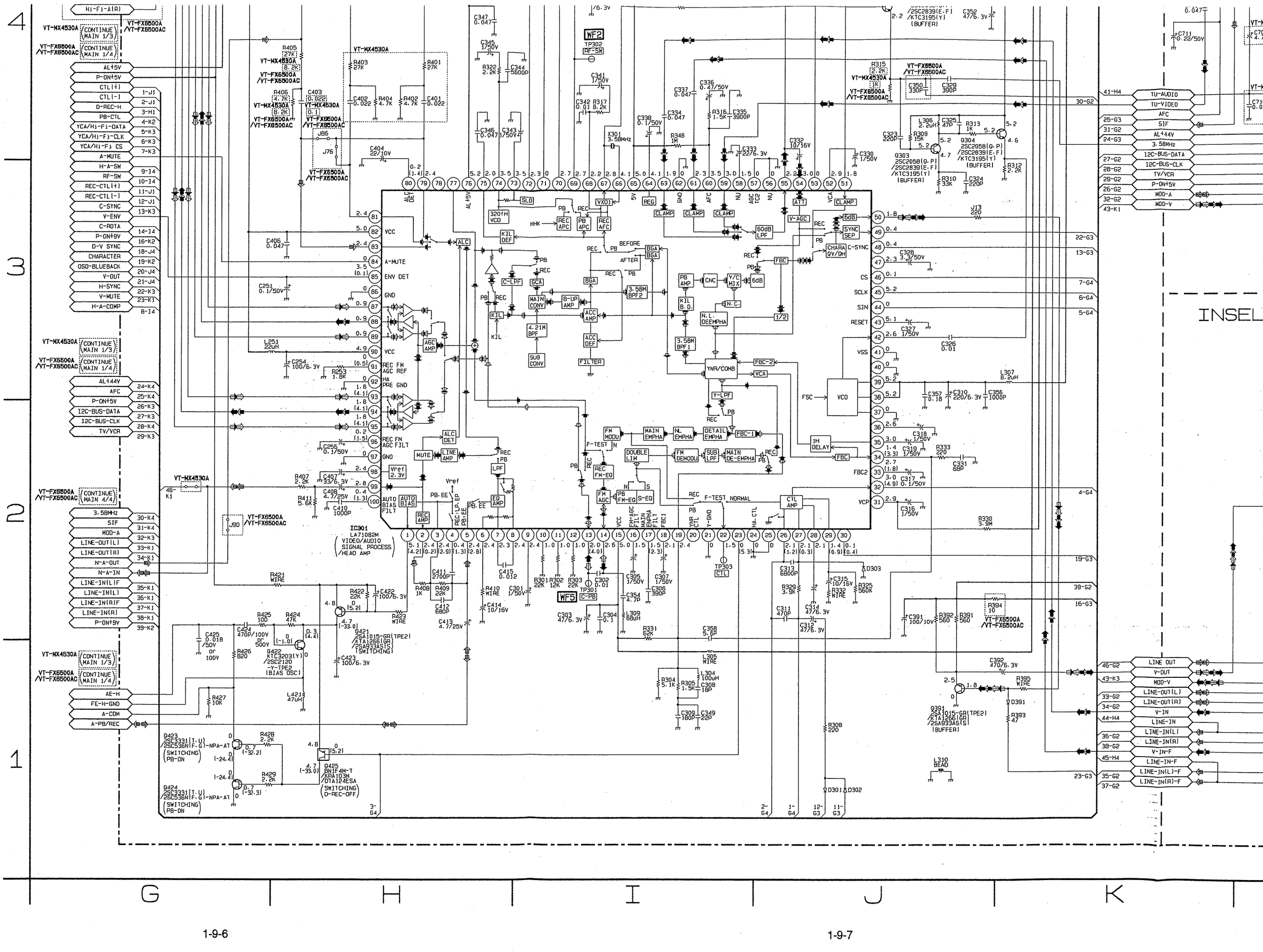
WAVEFORMS

WF1 (TP751 of Main CBA)



WF1 UPPER (TP751 of Main CBA)

WF2 LOWER (TP302 of Main CBA)


IC301
LA71082M
VIDEO/AUDIO
SIGNAL PROCESS
/HEAD AMP
INSEL
TU-AUDIO
TU-VIDEO
AFC
SIF
AL+44V
3.58MHz
I2C-BUS-DATA
I2C-BUS-CLK
TV/VCR
P-ON+5V
MOD-A
MOD-V
Hi-Fi-A(R)
CONTINUE MAIN 1/3
CONTINUE MAIN 1/4
CONTINUE MAIN 4/4
VT-MX4530A
VT-FX6500A
/VT-FX6500AC
AL+5V
CTL(+)
CTL(-)
D-REC-H
PB-CTL
YCA/Hi-Fi-DATA
YCA/Hi-Fi-CLK
YCA/Hi-Fi CS
A-MUTE
H-A-SW
RF-SW
REC-CTL(+)
REC-CTL(-)
C-SYNC
V-ENV
C-ROTA
P-ON+9V
D-V SYNC
CHARACTER
OSD-BLUEBACK
V-OUT
H-SYNC
V-MUTE
H-A-COMP
VCC
GND
ENV DET
REC FM AGC REF
HA PRE GND
REC FM AGC FILT
Vref 2.3V
AUTO BIAS FILT
AUTO BIAS
ALC DET
ALC
AGC AMP
MUTE
LINE AMP
LPF
EQ AMP
REC APC
PB APC
REC AFC
KIL DET
320fH VCO
SLO
VXO
C-LPF
GCA
MAIN CONV
B-UP AMP
ACC AMP
ACC DEF
FILTER
4.21M BPF
SUB CONV
KIL
KIL B.D.
3.58M BPF2
3.58M BPF1
N.L. DEEMPHA
PB AMP
CNC
V/C MIX
N.C.
1/2
CLAMP
ATT
V-AGC
60dB LPF
6dB
SYNC SEP
CHARA GV/GH
C-SYNC
YNR/COMB
Y-LPF
VCA
FSC
VCO
1H DELAY
FBC
FBC-1
FBC-2
FM MODU
MAIN EMPHA
NL EMPHA
DETAIL EMPHA
DOUBLE LIM
FM DEMODU
SUB LPF
MAIN DE-EMPHA
REC FM-EQ
FM AGC
PB FM-EQ
S-EQ
F-TEST
F-TEST_NORMAL
CTL AMP
YNR CTL
Y-GND
HA CTL
FM-AGC FIL
MAIN EMPHA FILT
FBC1
FBC2
YCP
CS
SCLK
SIN
RESET
VSS
SCL
SDA
SAD
REC
PB
BEFORE
AFTER
BGA
HHK
VCC
5V
REG
GND
AFC
NU
AGC TC2
VCA
AL+5V
ALC DET
Q421 2SA1015-GR(TPE2) /XTA1266(GR) /2SA933AS(S) (SWITCHING)
Q422 XTC3203(Y) /2SC2120 -Y-TPE2 (BIAS OSC)
Q423 SSC3331(T,U) /2SC536N(F,G)-NPA-AT (SWITCHING PB-ON)
Q424 SSC3331(T,U) /2SC536N(F,G)-NPA-AT (SWITCHING PB-ON)
Q425 BN1F4M-T /XRA103M /DTA124ESA (SWITCHING D-REC-OFF)
Q303 2SC2058(O,P) /2SC2839(E,F) /KTC3195(Y) (BUFFER)
Q391 2SA1015-GR(TPE2) /XTA1266(GR) /2SA933AS(S) (BUFFER)
D301 D302 D303 D391
L301 L302 L303 L304 L305 L306 L307 L310 L251 L4213
X301 3.58MHz
TP301 C-PB
TP302 RF-SW
TP303 CTL
WF1
WF2
WF5
J13 220
J76
J86
J90
J91
J92
J93
J94
J95
J96
J97
J98
J99
J100
J101
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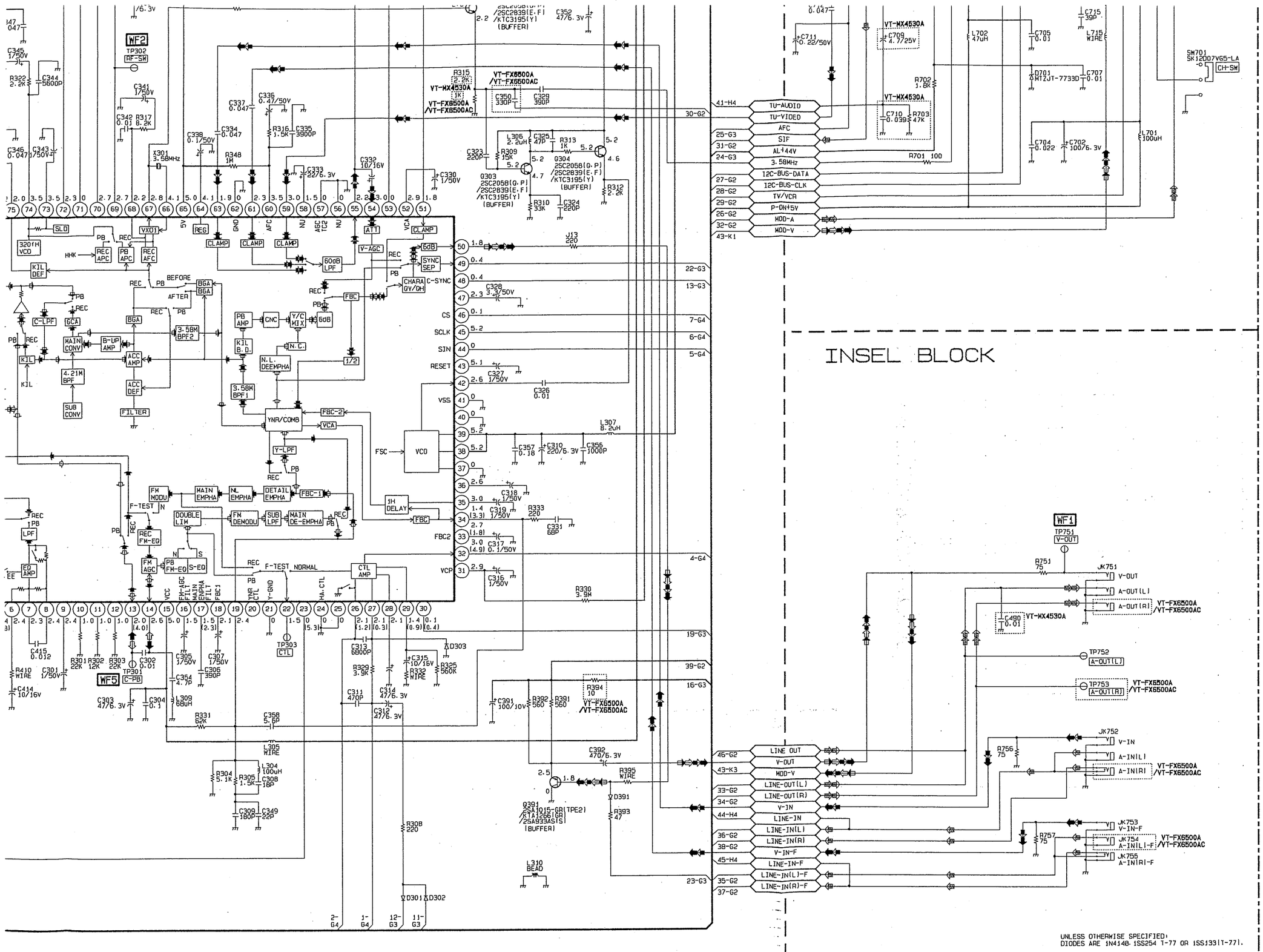
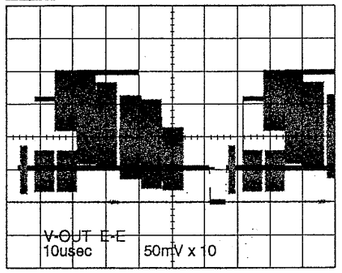
J129



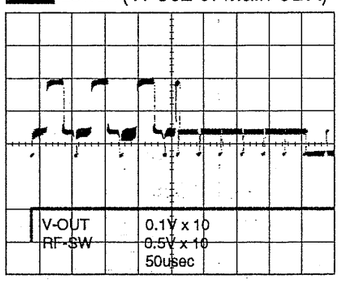
WAVEFORMS

WF1 (TP751 of Main CBA)



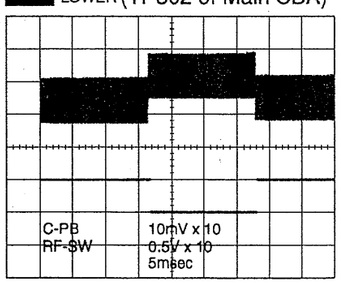
WF1 UPPER (TP751 of Main CBA)

WF2 LOWER (TP302 of Main CBA)



WF5 UPPER (TP301 of Main CBA)

WF2 LOWER (TP302 of Main CBA)

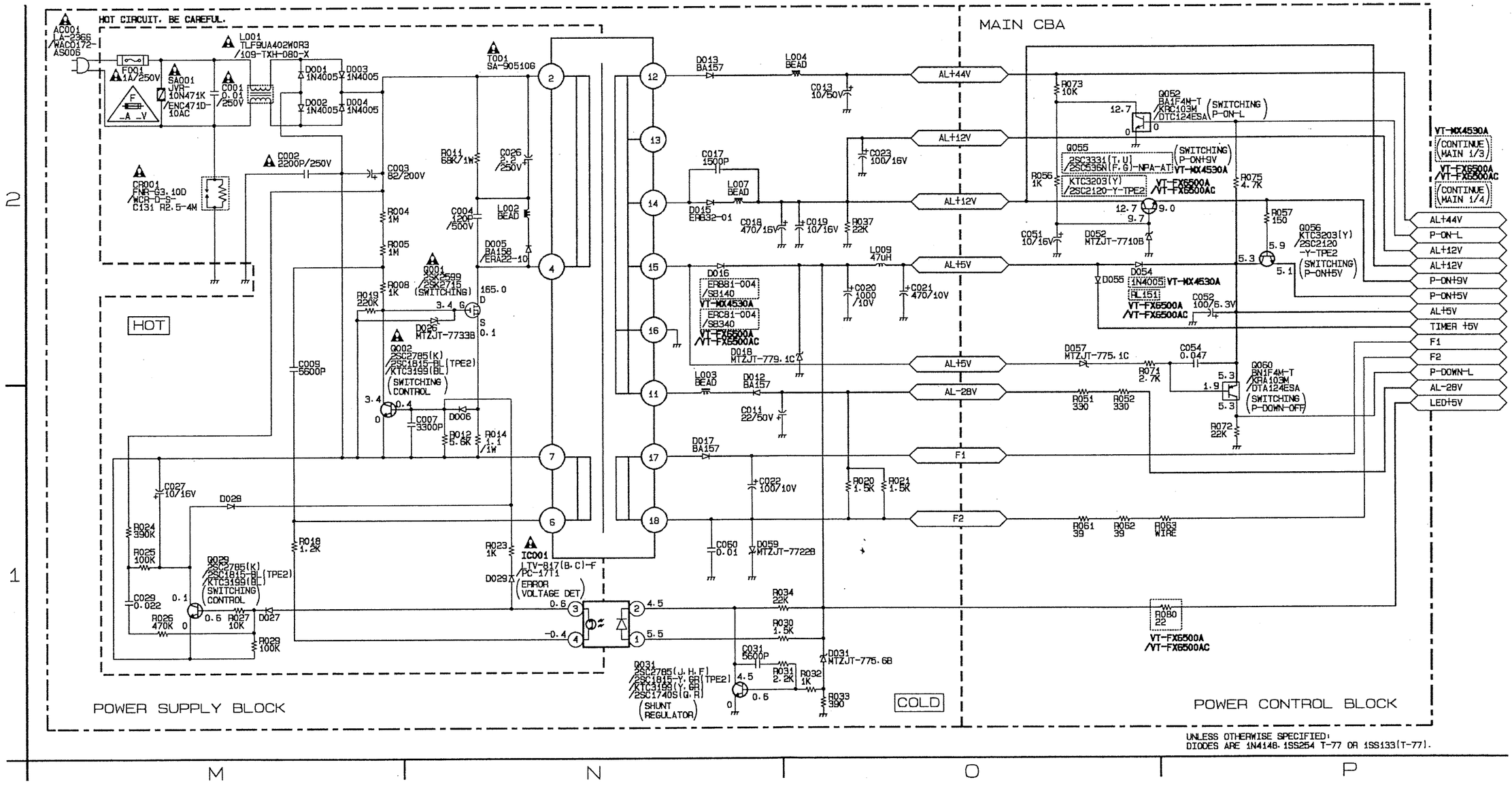


Main 3/3 Schematic Diagram (VT-MX4530A)
Main 3/4 Schematic Diagram (VT-FX6500A / VT-FX6500AC)

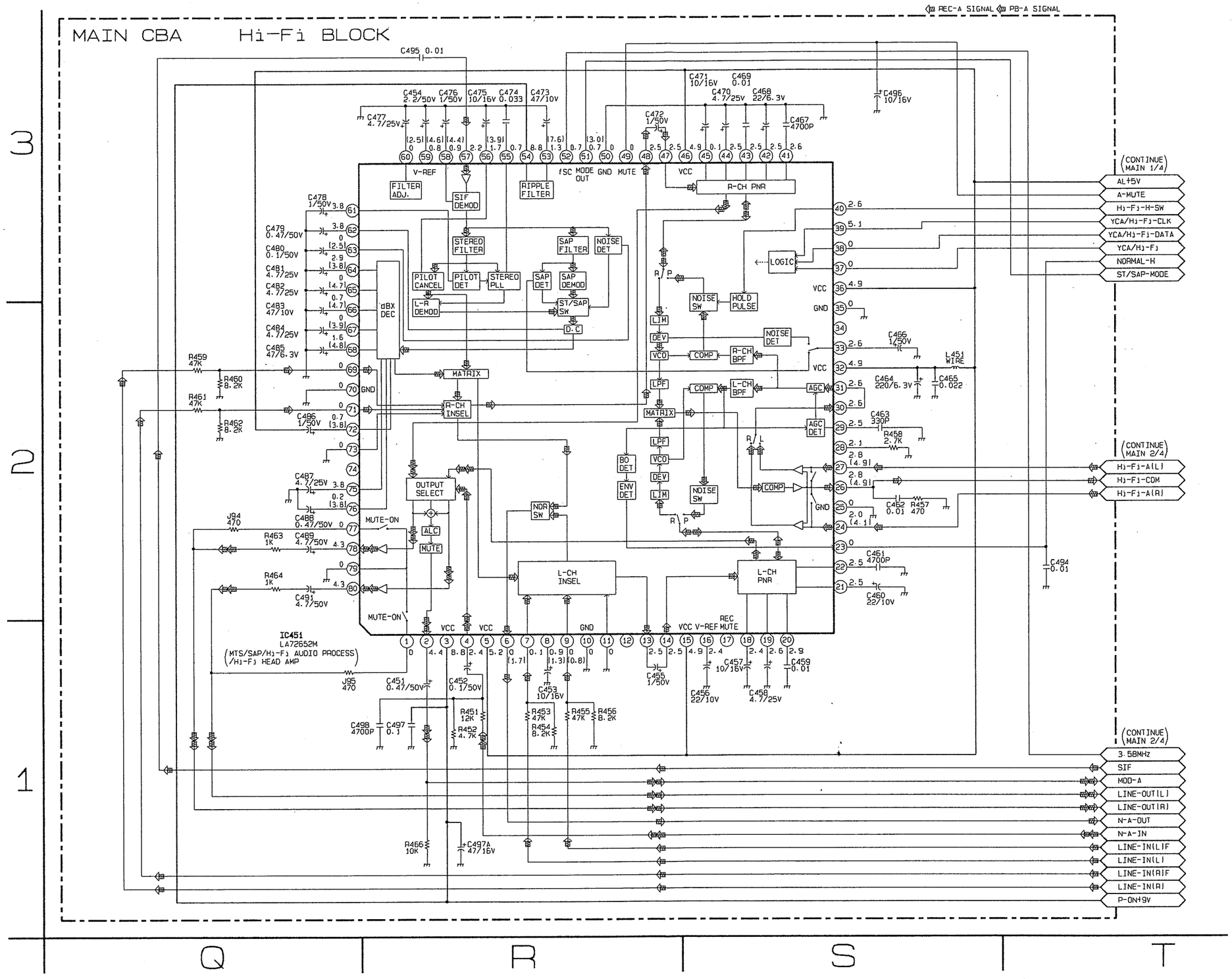
CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

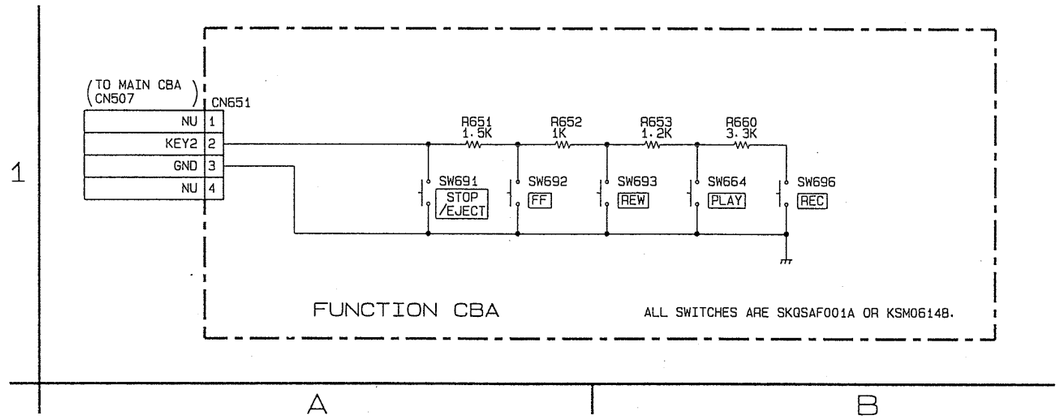
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



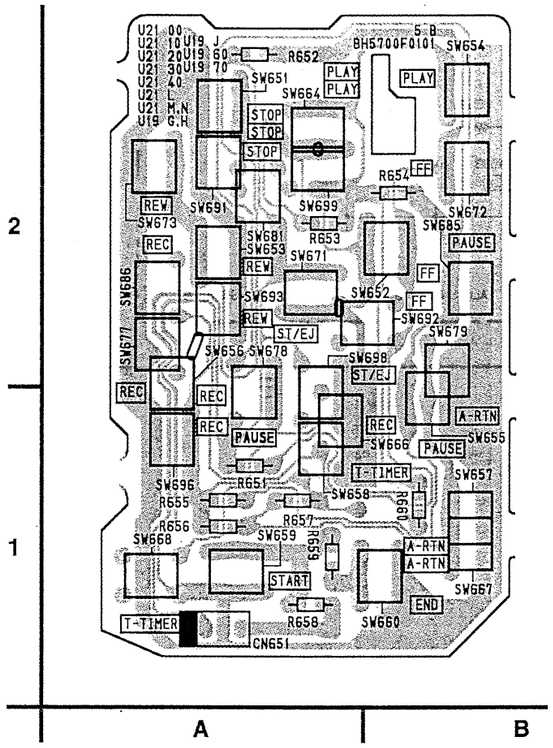
Main 4/4 Schematic Diagram (VT-FX6500A / VT-FX6500AC)



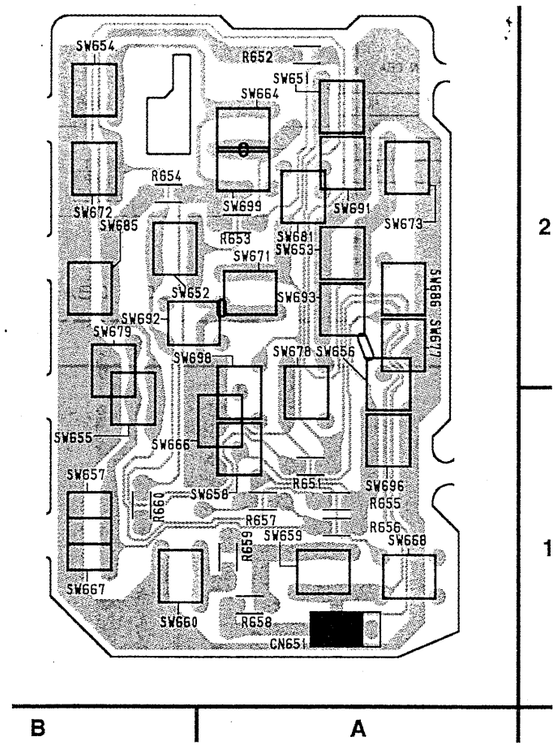
Function Schematic Diagram



Function CBA Top View



Function CBA Bottom View

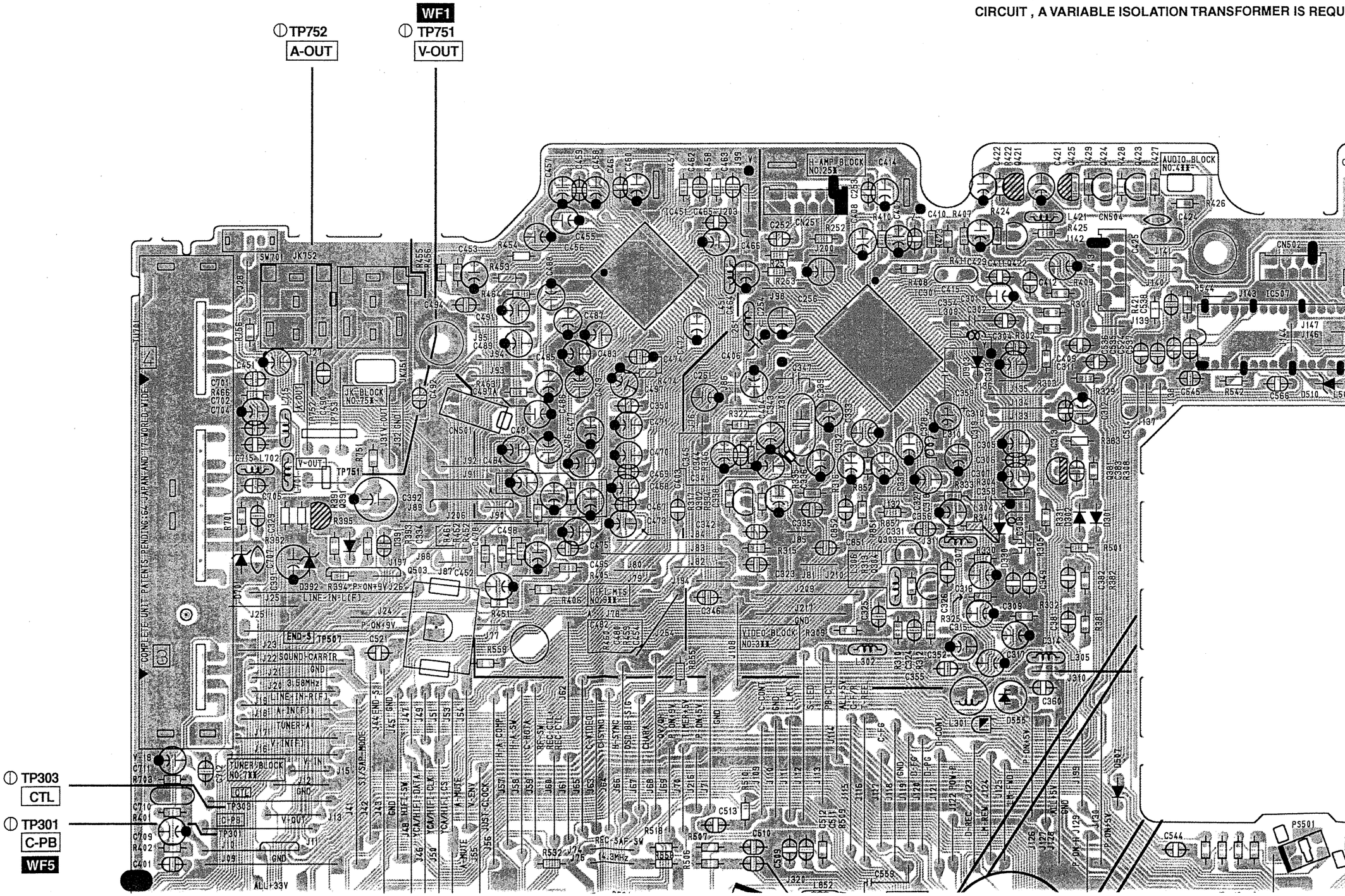


Main CBA Top View

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE PO
SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE
ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE I
SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SU
CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQU

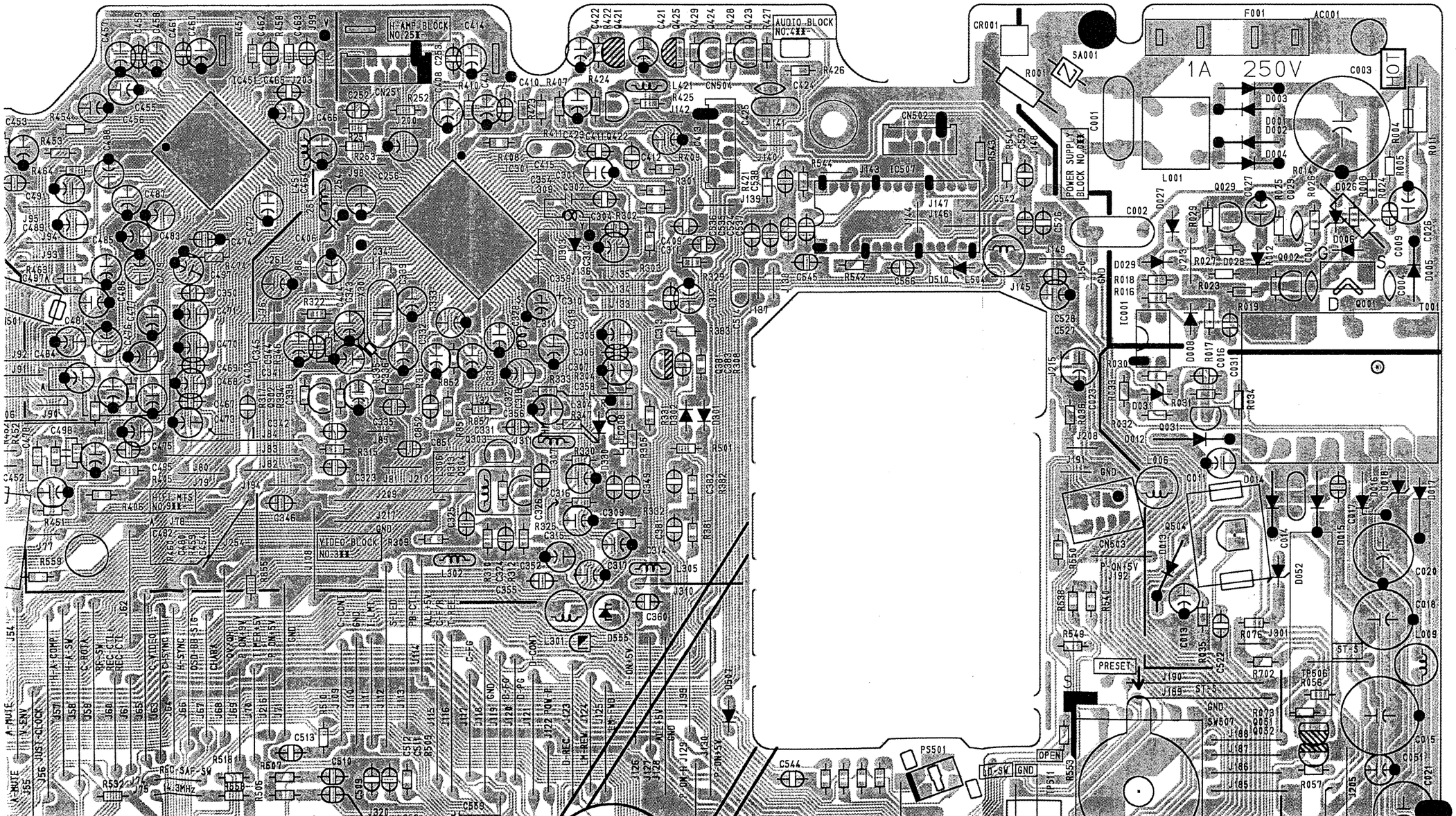


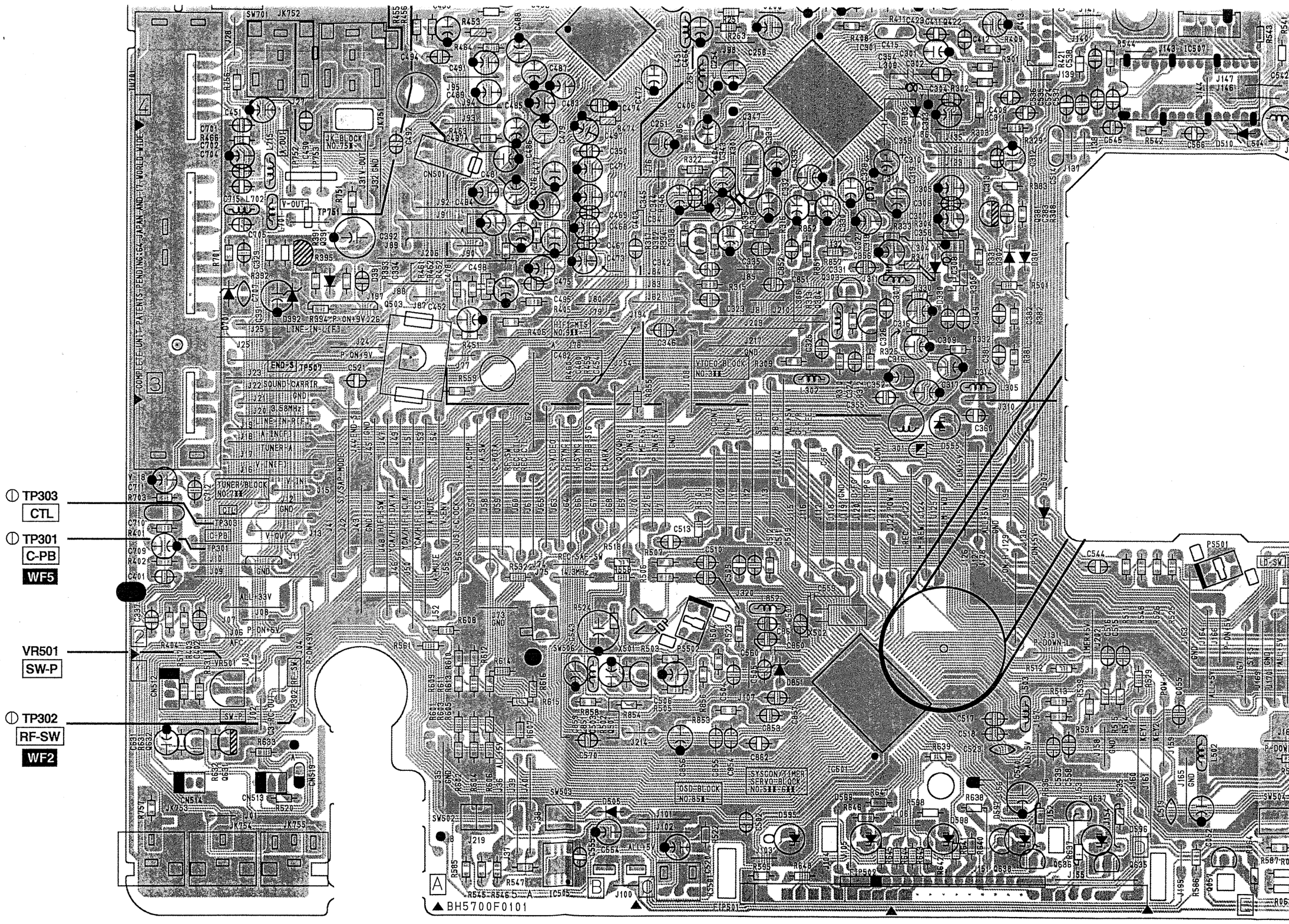
iit is used in this unit.
ick to see that all components in the power supply
ou connect the AC plug to the AC power supply.
mponents in the power supply circuit to fail.

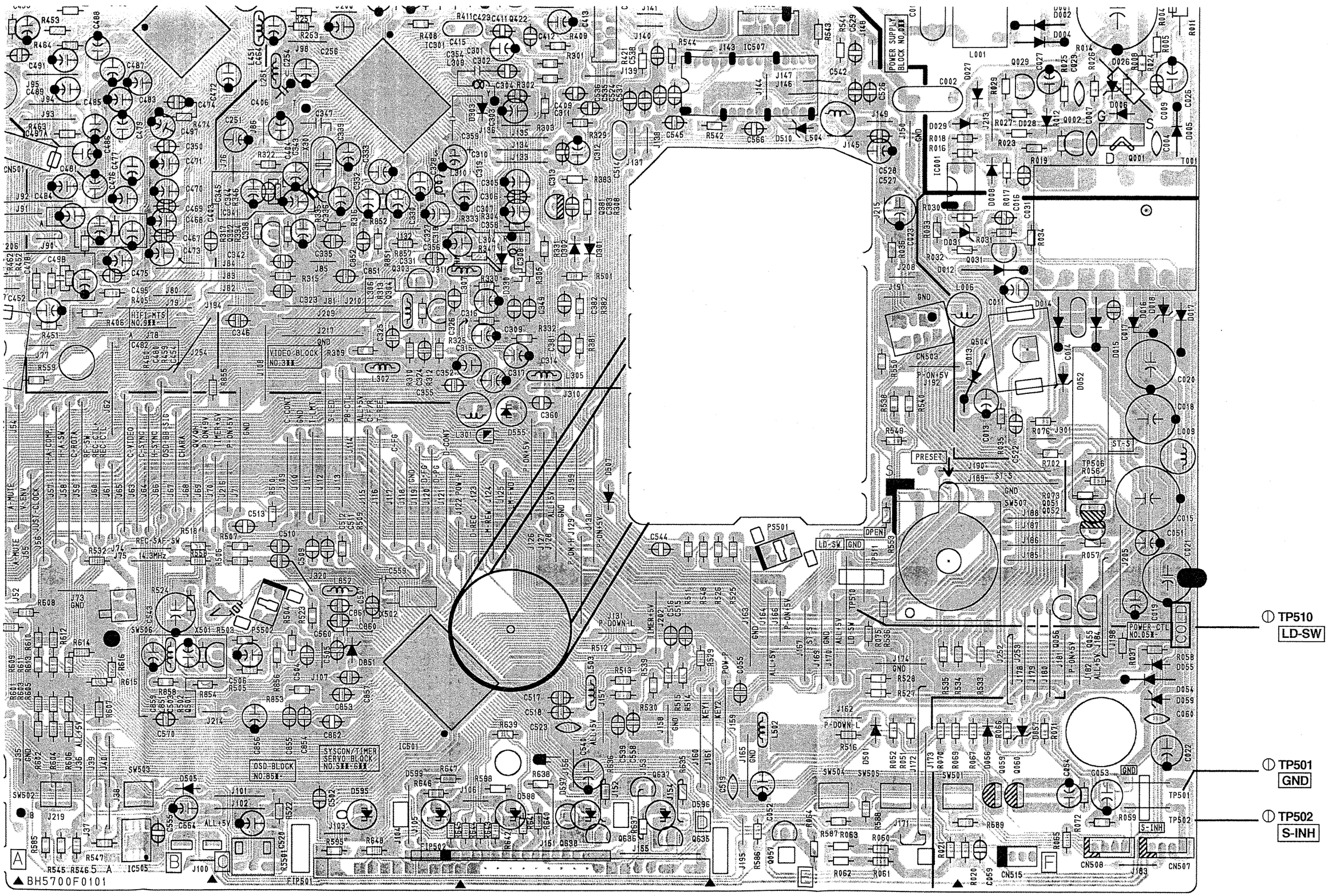
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.




TP303
CTL
TP301
C-PB
WF5
VR501
SW-P
TP302
RF-SW
WF2
▲BH5700F0101


TP510
LD-SW
TP501
GND
TP502
S-INH

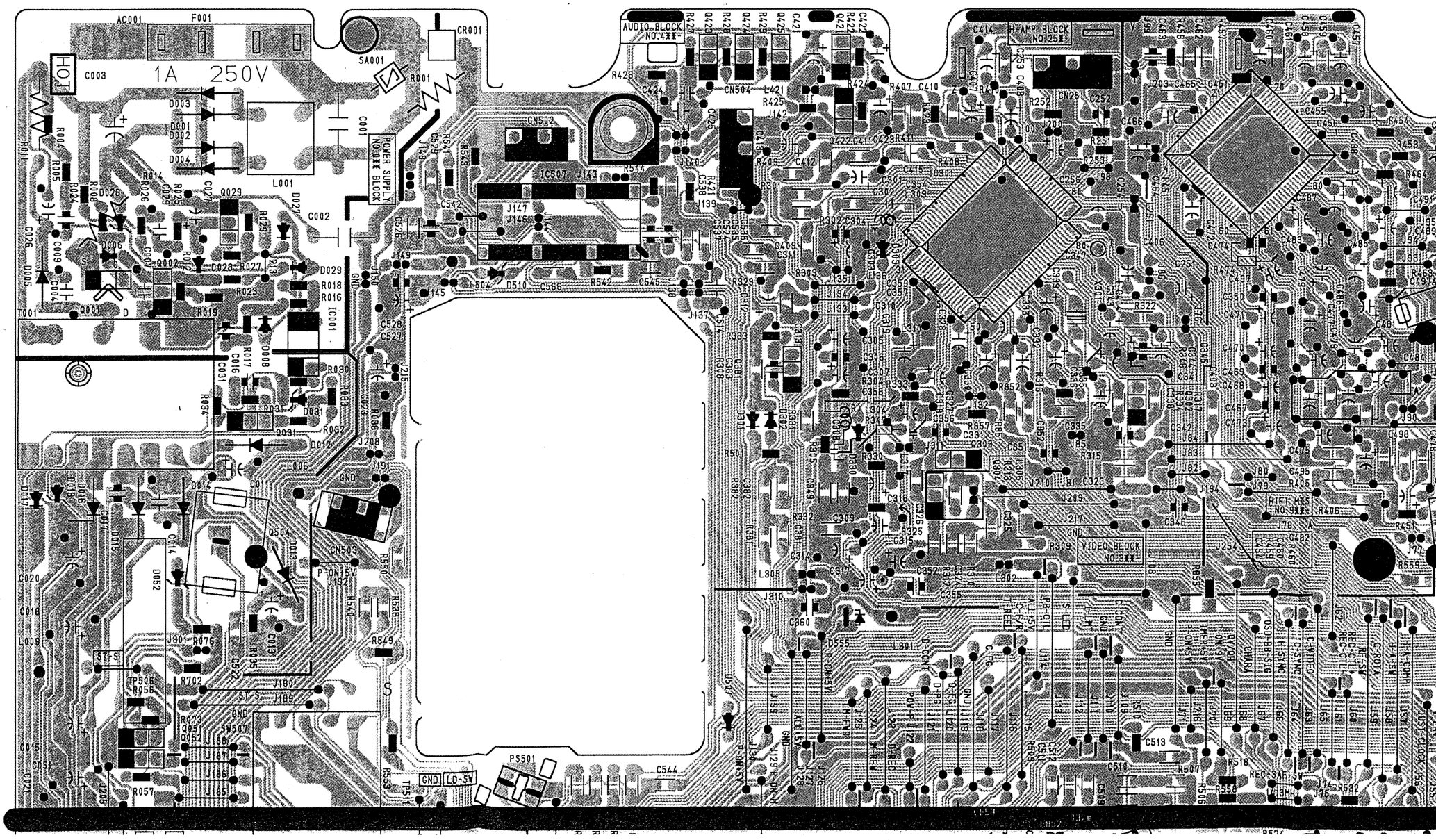
Main CBA Bottom View

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE :
The voltage for
hot GND as a c

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.



this unit.
at all components in the power supply
ne AC plug to the AC power supply.
the power supply circuit to fail.

CAUTION
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D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
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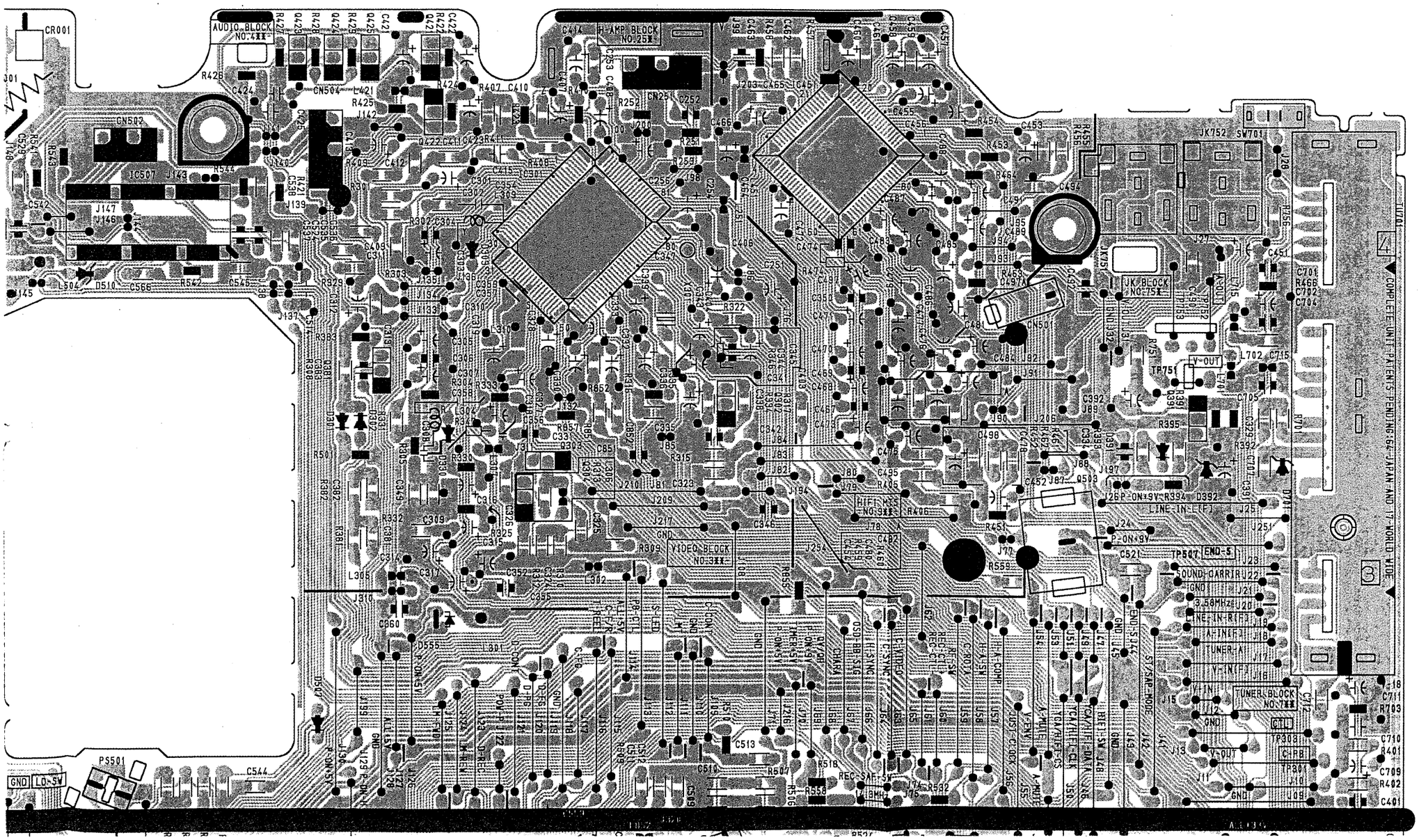
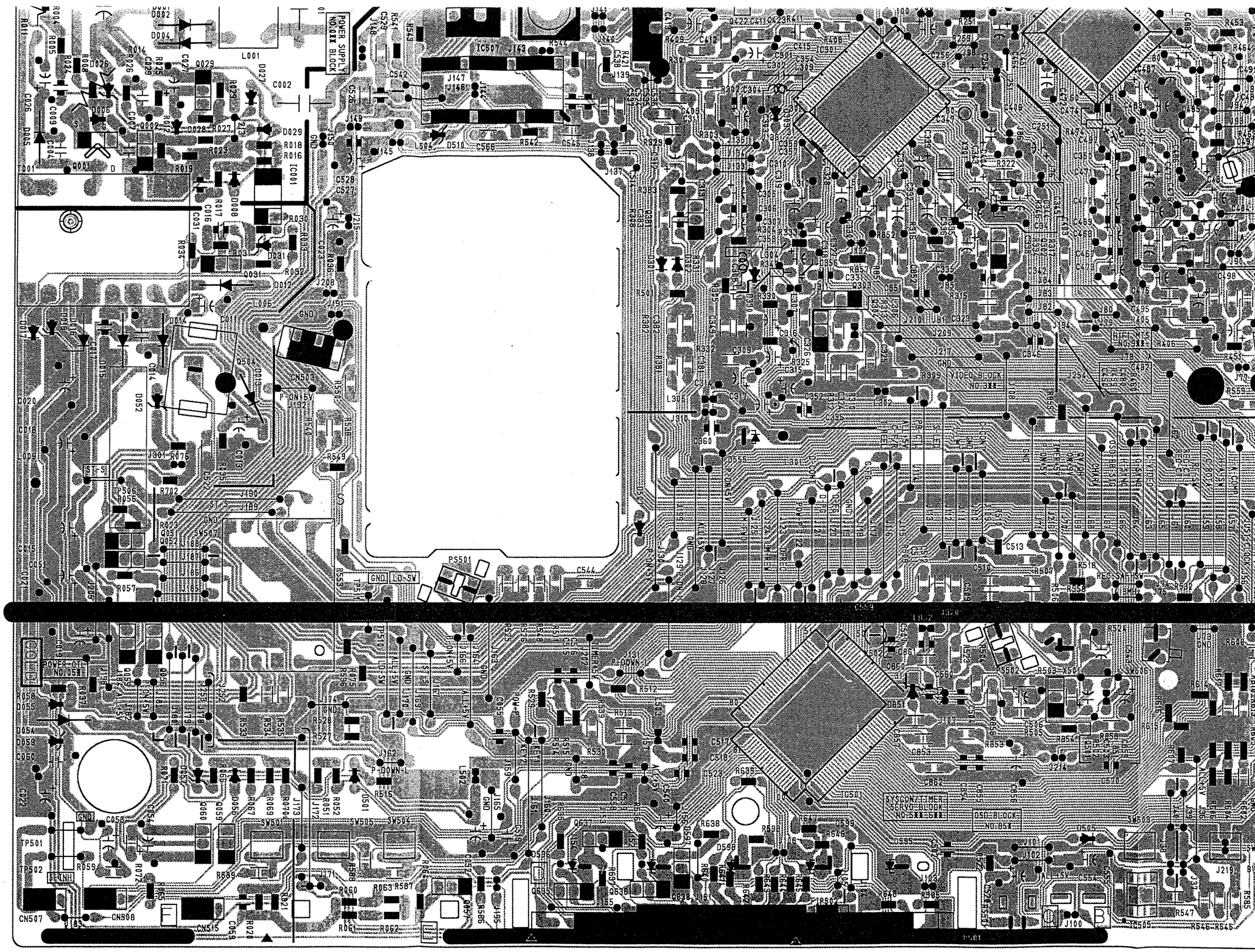
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.




POWER SUPPLY NO.1XX BLOCK
IC507
IC001
L001
L504
D510
C566
R542
C545
C528
C527
GND
D029
R018
R016
D008
R030
R033
D031
R092
D012
J208
J209
J210
J211
J212
J213
J214
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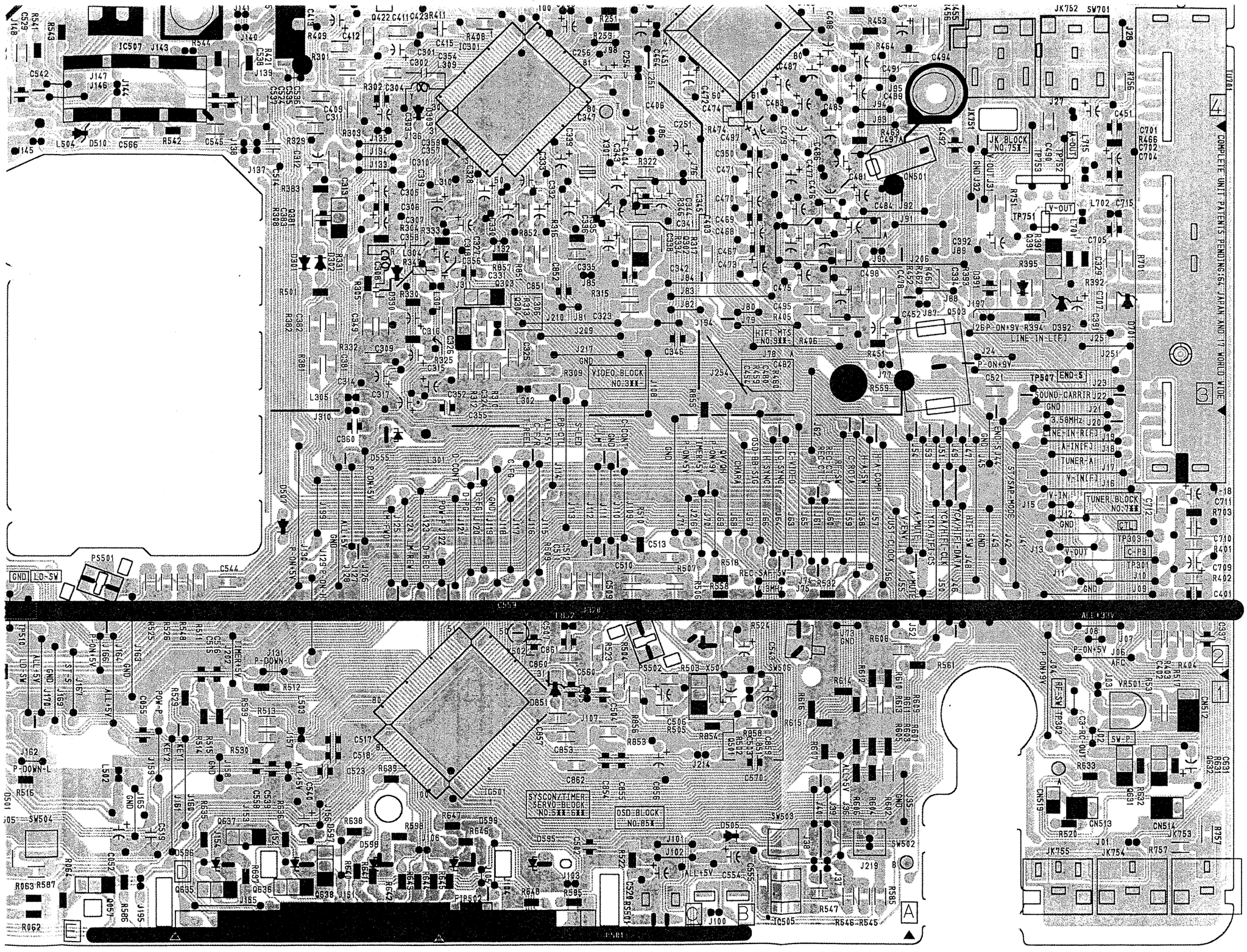
COMPLETE UNIT PATENTS PENDING 64 JAPAN AND 17 WORLD WIDE
JK752 SW701
JK751
JK BLOCK NO:75X
V-OUT
TP752
TP753
TP751
L701
L702
L715
C715
C705
C707
C701
R466
C702
C704
R356
C451
C494
C496
ON501
R751
R395
R392
R394
D392
D701
26P ON+9V
LINE-IN-L(FJ
J25
J24
P-ON+9V
C521
TP507
END-S
SOUND CARRIR
GND
3.58MHz
NE-IN-R(FJ
A-IN(FJ
TUNER-A
V-IN(FJ
V-IN
GND
TUNER BLOCK NO:7XX
CTL
TP303
C-FB
TP301
V-OUT
C712
C711
R703
C710
R401
C709
R402
C401
J28
J27
J15
J12
J13
J11
J10
J09
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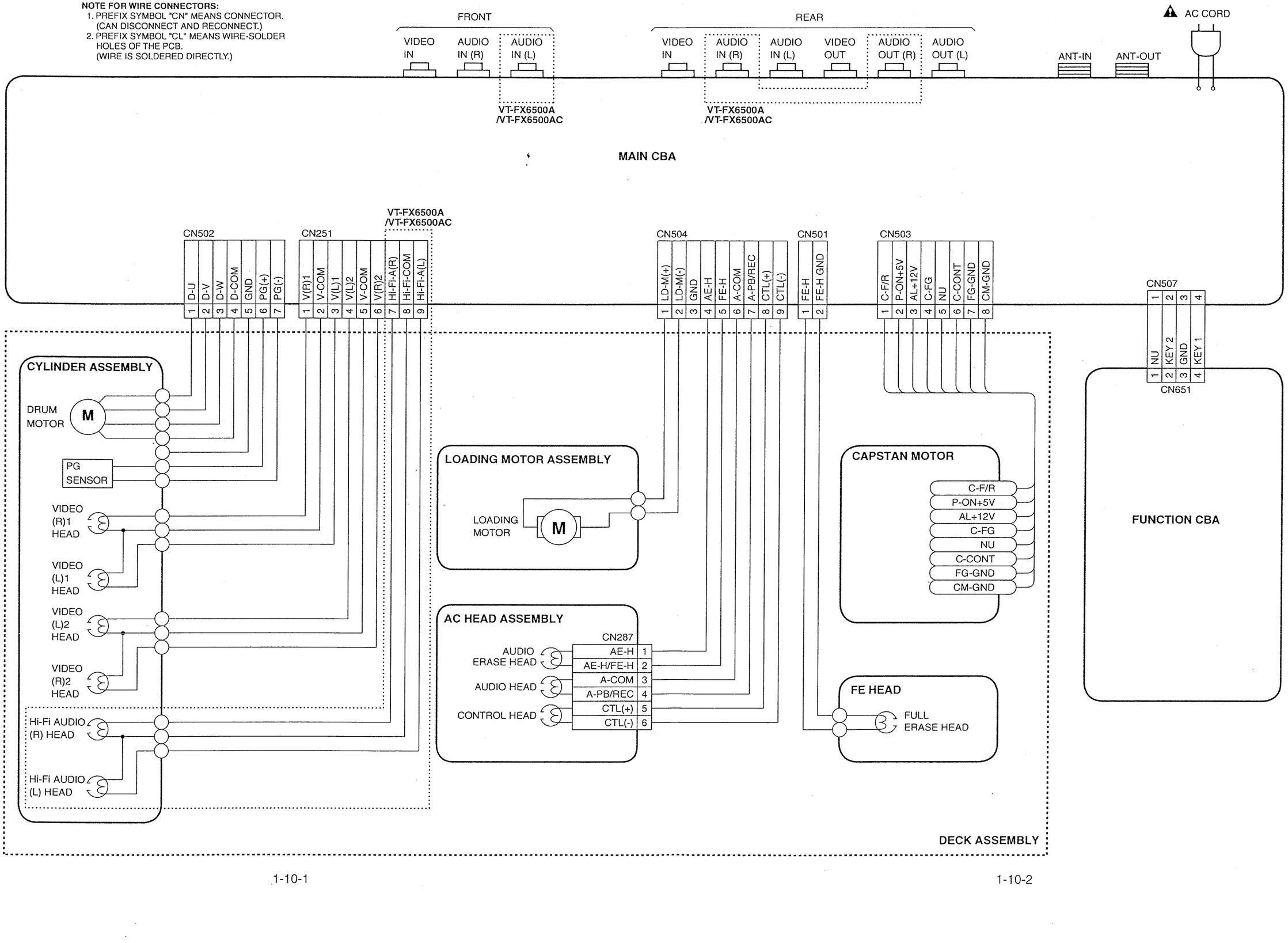
J181
J182

WIRING DIAGRAM

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)



SYSTEM CONTROL TIMING CHARTS

Mode SW : LD-SW

LD-SW Position detection A/D Input voltage Limit (Calculated voltage)	Symbol
4.06V~4.69V (4.38V)	EJ
4.70V~5.00V (5.00V)	CL
0.00V~0.30V (0.00V)	SB
0.31V~1.20V (0.64V)	TL
1.21V~2.02V (1.72V)	LC
4.70V~5.00V (5.00V)	FB
3.35V~4.05V (2.17V)	SF
2.03V~2.60V (2.27V)	AU
1.21V~2.02V (1.80V)	AL
2.61V~3.34V (2.96V)	SS
4.70V~5.00V (5.00V)	GC
3.35V~4.05V (3.69V)	RS

Note:

EJ ⟶ RS : Loading FWD (LM-FWD "H", LM-REV "L")

RS ⟶ EJ : Loading REV (LM-FWD "L", LM-REV "H")

Stop (A) = Loading

Stop (B) = Unloading

Note :

Symbol	Loading Status
EJ	Eject
CL	Eject ~ REW Reel
SB	REW Reel ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
LC	Loading Switching ~ Brake Cancel
FB	Brake Cancel
SF	~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ Still / Slow
SS	Still / Slow ~ Capstan Reversal
GC	Capstan Reversal ~ RS (REW Search)
RS	RS (REW Search)

Still/Slow Control

Frame Advance Timing Chart

1) SP MODE

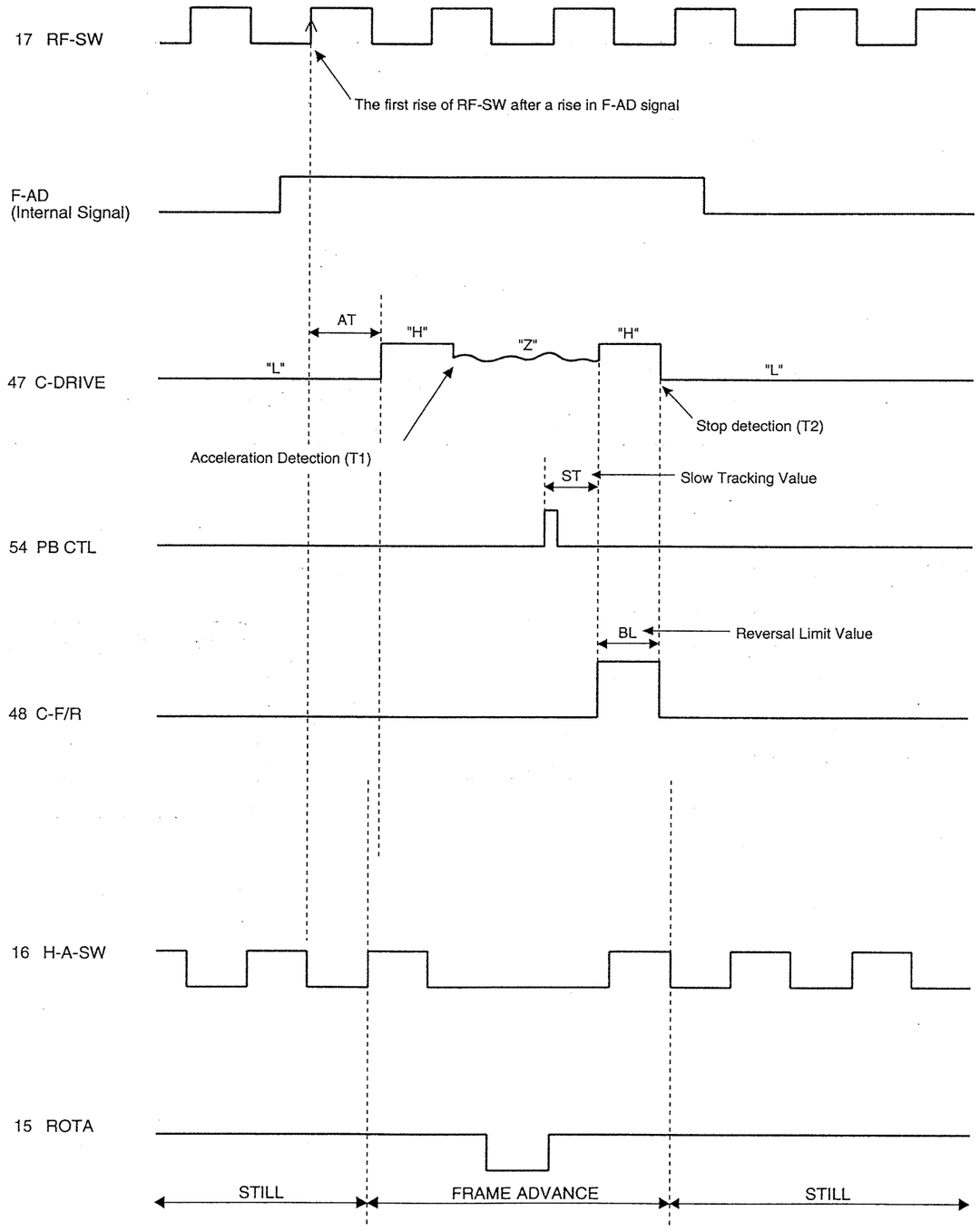


Fig.1

2) LP/SLP MODE

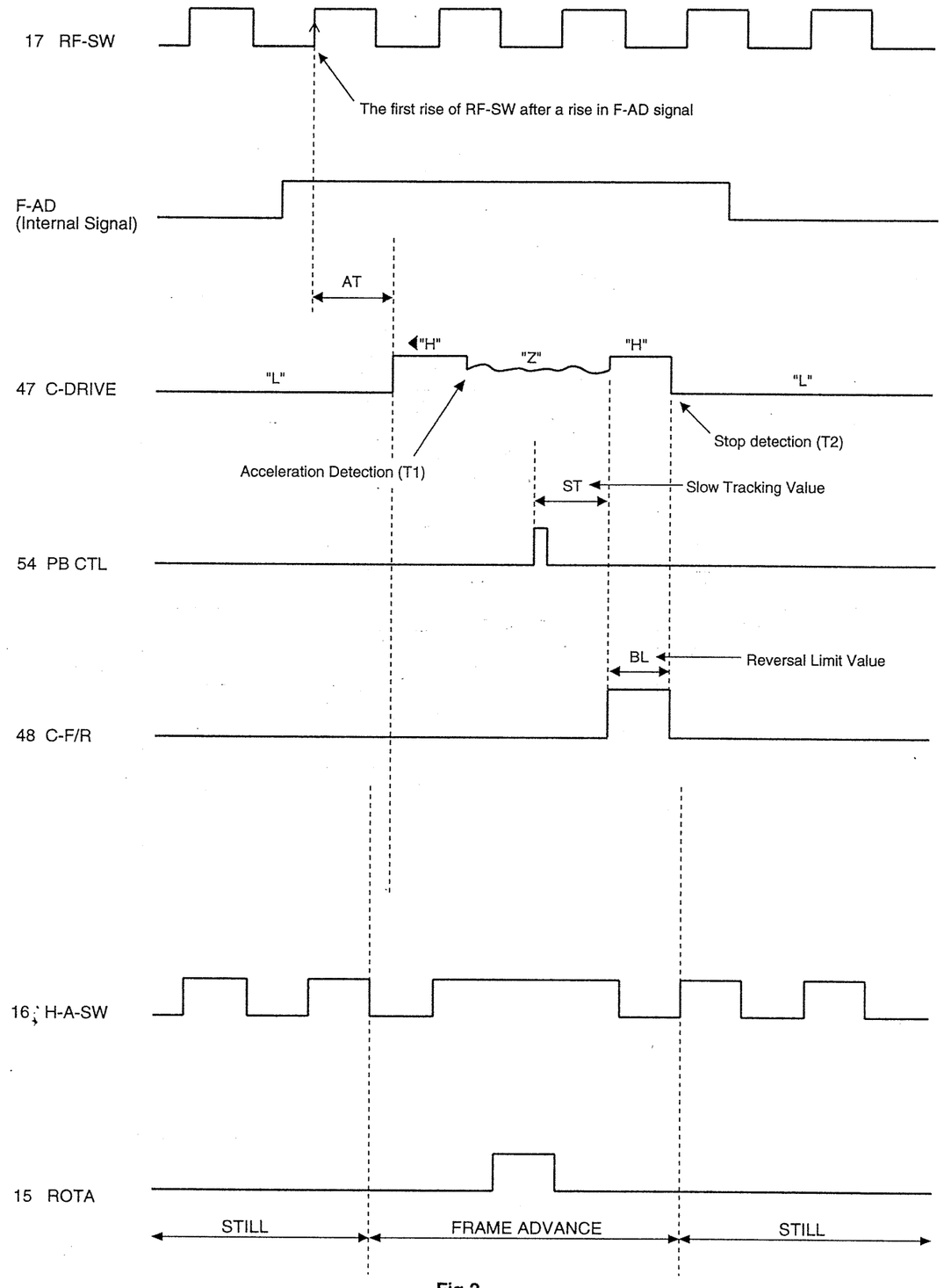


Fig.2

2. STOP(A) -> FF -> STOP(A) -> REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT

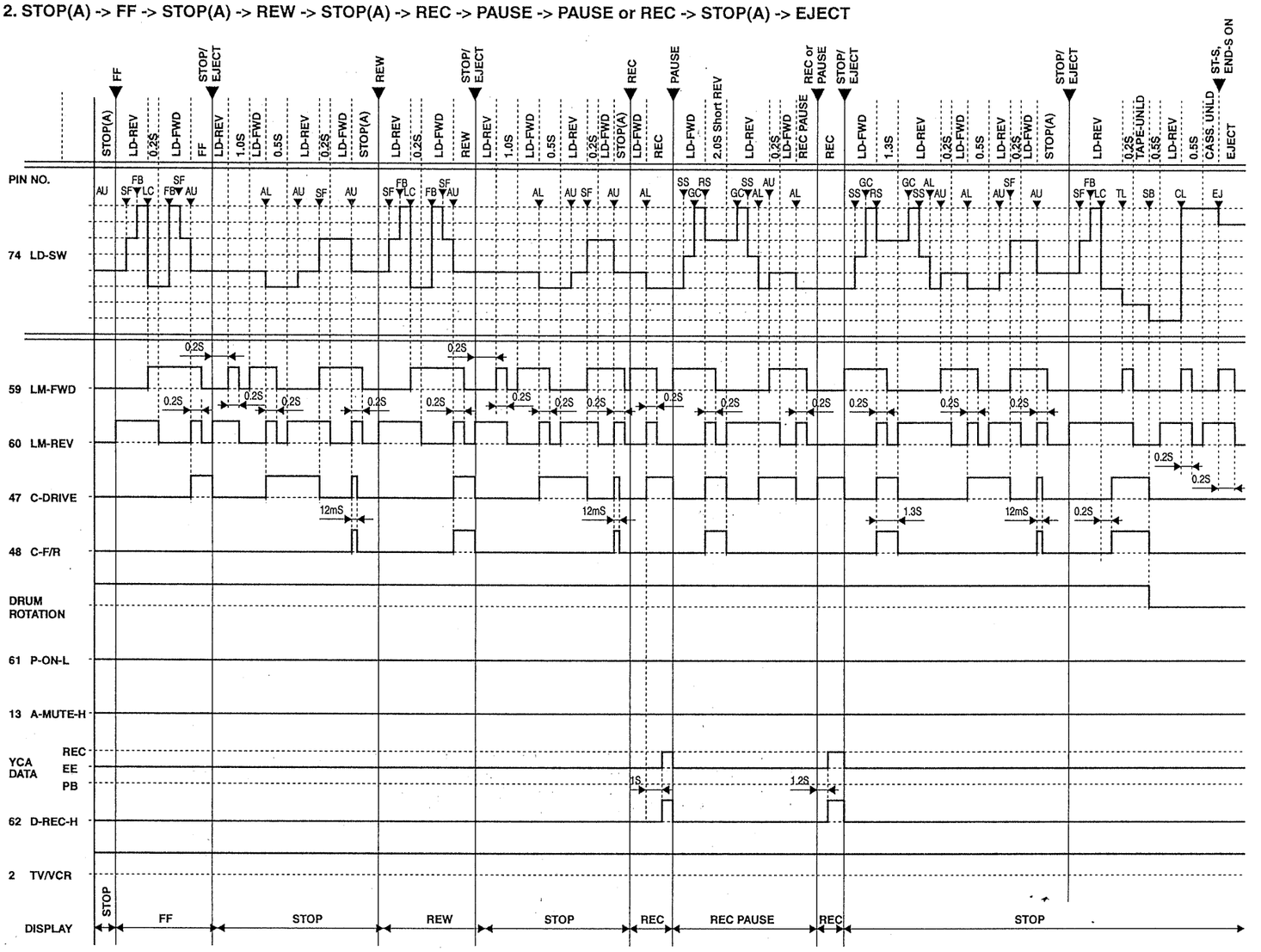


Fig.4

1-11-5

1. EJECT (POWER OFF) -> CASSETTE IN (POWER ON) -> STOP(B) -> STOP(A) -> PLAY -> RS -> FS -> PLAY -> STILL -> PLAY -> STOP(A)

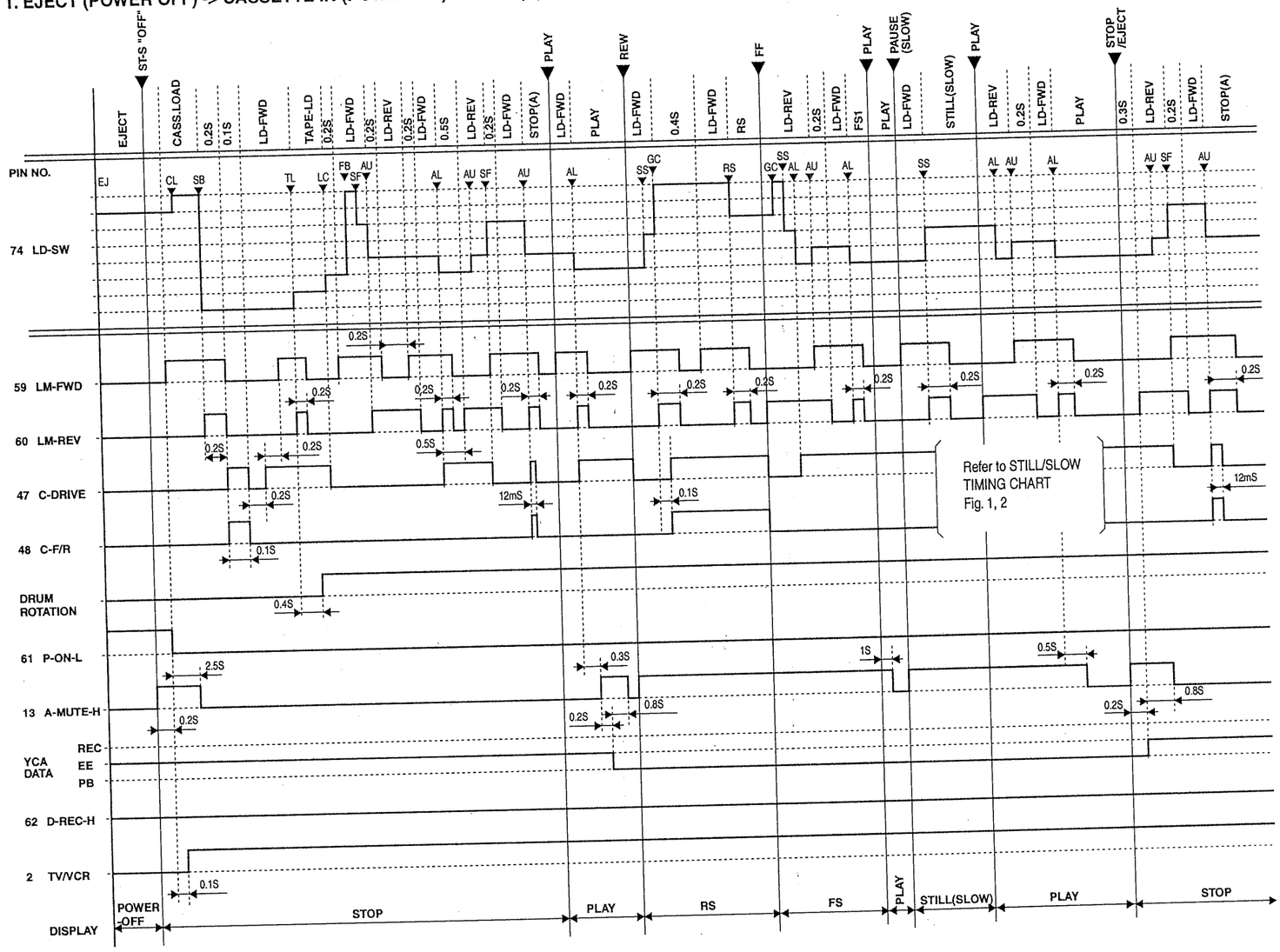


Fig.3

1-11-4

IC PIN FUNCTION

IC501 (SERVO / SYSTEM CONTROL IC)

"H" ≥ 4.5V, "L" ≤ 1.0V

Comparison Chart of Models and Marks

MODEL	MARK
VT-MX4530A	A
VT-FX6500A	B
VT-FX6500AC	C

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
1		IN	REMOC-ON-IN	Remote Control Sensor	L
2		OUT	TV/VCR	RF Conv. ON/OFF Signal (TV="L"/ VCR="H")	H/L
3		OUT	V-MUTE	Video Mute Signal	L
4		–	N.U.	Not Used	–
5		–	N.U.	Not Used	–
6		–	N.U.	Not Used	–
7		–	N.U.	Not Used	–
8		OUT	YCA/ HiFi-CS	YCA/HiFi IC Control Chip Select	H
9		IN/ OUT	I²C BUS-DATA	I²CBUS Data Input/Output	H/L
10		OUT	I²C BUS-CLK	I²CBUS Clock Output	H/L
11		OUT	YCA/ HiFi-CLK	YCA/HiFi IC Control Clock Output	H/L
12		OUT	YCA/ HiFi-DATA	YCA/HiFi IC Control Data Output	H/L
13		OUT	A-MUTE	Audio Mute Control Signal	H
14		IN	H-A-COMP	Head Amp Comparator Signal	H/L
15		OUT	C-ROTA	Color Phase Rotary Changeover Signal	H/L
16		OUT	H-A-SW	Video Head Amp Switching Pulse	H/L
17		OUT	RF-SW	Video Head Switching Pulse	H/L
18	A	–	N.U.	Not Used	–
	B, C	OUT	HiFi-H-SW	HiFi Audio Head Switching Pulse	H/L
19		OUT	REC-CTL(+)	Record Control Signal (+)	H/L
20		OUT	REC-CTL(-)	Record Control Signal (-)	H/L
21		IN	C-SYNC	Composite Synchronized Pulse	PULSE
22		–	GND	GND	–
23		IN	14.31818 MHz-IN	Clock for OSD (4fsc: 14.31818 MHz) Input	–
24		–	OSDVss	OSDVss	–
25		–	N.U.	Not Used	–
26		IN	C-VIDEO-IN	Composite Video Signal Input (for Slicer)	–
27		--	VHOLD	Condenser Connected Terminal (Slicer)	–
28		–	HLF	LPF Connected Terminal (Slicer)	–
29		–	GND	GND	–
30		OUT	OSD-BB-OUT	Composite Video Signal Output (Blue Back)	–
31		OUT	OSD-CHARA-OUT	Character Output (Superimposed)	–
32		–	OSDVcc	OSDVcc	–
33		OUT	D-V SYNC-OUT	Dummy V-sync Output	H/Hi-z
34		IN	RESET	System Reset Signal (Reset= "L")	L
35		–	OSCIN	Clock Input for letter size	–
36		–	OSCOUT	Clock Output for letter size	–
37		–	Vcc	Vcc(Timer +5v)	–
38		–	XIN	Main Clock 14.31818 MHz	–
39		–	Xout	Main Clock	–
40		–	Vss	Vss(GND)	–
41		–	XC IN	Sub Clock 32 kHz	–
42		–	XC OUT	Sub Clock 32 kHz	–
43		IN	CLKSEL (GND)	Clock Select	L
44		IN	REC-SAF-SW	Recording Safety SW Detect (With Record tab="L"/Without Record tab="H")	H/L
45		–	N.U.	Not Used	–
46		–	N.U.	Not Used	–
47		OUT	C-DRIVE	Capstan Motor Drive Signal	H/Hi-Z
48		OUT	C-F/R	Capstan Motor FWD/REV Control Signal (FWD="L"/ REV="H")	H/L
49		IN	T-REEL	Take Up Reel Rotation Signal	PULSE
50		–	N.U.	Not Used	–
51		IN	C-FG	Capstan Motor Rotation Detection Pulse	PULSE
52		IN	D-FG	Drum Motor Rotation Detection Pulse	PULSE
53		IN	D-PG	Drum Motor Pulse Generator	PULSE
54		IN	PB-CTL	Playback Control Signal	PULSE
55		OUT	C-CONT	Capstan Motor Control Signal	PWM
56		OUT	D-CONT	Drum Motor Control Signal	PWM
57		–	N.U.	Not Used	–
58		–	N.U.	Not Used	–
59		OUT	LM-FWD	Loading Motor FWD Output	H
60		OUT	LM-REV	Loading Motor REV Output	H
61		OUT	P-ON-L	Power On Signal to Low	L
62		OUT	D-REC	Delayed Record Signal	H
63		IN	P-DOWN-L	Power Voltage Down Detector Signal	L
64		–	N.U.	Not Used	–
65		–	N.U.	Not Used	–
66	A	–	N.U.	Not Used	–
	B, C	IN	HiFi/NOR-IN	Audio Mode Input HiFi="L," Normal="H"	H/L
67	A	–	N.U.	Not Used	–
	B, C	IN	ST/SAP-IN	Tuner Stereo/Sap Detector Signal Input	A/D
68		IN	END-S	Tape End Position Detect Signal	A/D
69		IN	AFC	Automatic Frequency Control Signal	A/D

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
70		IN	V-ENV	Video Envelope Signal	A/D
71		IN	PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage	A/D
72		IN	KEY-2	A/D Key Data Signal	A/D
73		IN	KEY-1	A/D Key Data Signal	A/D
74		IN	LD-SW	Deck Mode Position Detect Signal	A/D
75		IN	ST-S	Tape Start Position Detect Signal	A/D
76		–	AVcc	A/D Converter Power Input / Standard Voltage Input	–
77		–	FLDVcc	FLDVcc	–
78		–	FLDVp	GND	–
79		–	N.U.	Not Used	–
80		–	N.U.	Not Used	–
81		–	N.U.	Not Used	–
82		–	N.U.	Not Used	–
83		–	N.U.	Not Used	–
84		–	N.U.	Not Used	–
85		OUT	G1	Display Grid Output	H
86		OUT	G2	Display Grid Output	H
87		OUT	G3	Display Grid Output	H
88		OUT	G4	Display Grid Output	H
89		OUT	a	Display Segment Output	H
90		OUT	b	Display Segment Output	H
91		OUT	c	Display Segment Output	H
92		OUT	d	Display Segment Output	H
93		OUT	f	Display Segment Output	H
94		OUT	g	Display Segment Output	H
95		OUT	h	Display Segment Output	H
96		OUT	i	Display Segment Output	H
97		OUT	j	Display Segment Output	H
98		OUT	e	Display Segment Output	H
99		–	N.U.	Not Used	–
100		–	N.U.	Not Used	–

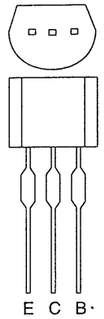
Notes:

Abbreviation for Active Level:

PWM ---------- Pulse Wide Modulation

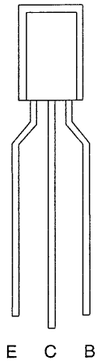
A/D ---------- Analog - Digital Converter

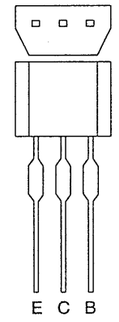
LEAD IDENTIFICATIONS



2SC3331 (T, U)
2SC2120-Y-TPE2
2SA1015-GR (TPE2)
2SC1815-Y (TPE2)
2SC1815-BL(TPE2)
KTC3203 (Y)
KTA1266 (Y, GR)
2SC1815-GR(TPE2)

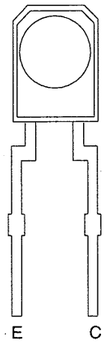
2SC536NF(NG)-NPA-AT





DTC124ESA
DTA124ESA
2SA933AS(S)
2SC2058(Q,P)
2SC2785 (J, H, F, K)
KRC103M
KTC3195 (Y)
KTC3199 (Y, GR, BL)
2SC1740S(Q,R)
BA1F4M-T
KRA103M
2SC2839(E,F)

ST-304L-(A,B,C)



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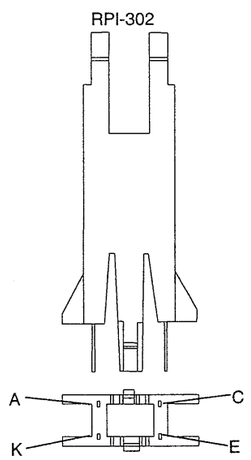

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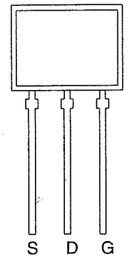

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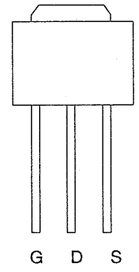

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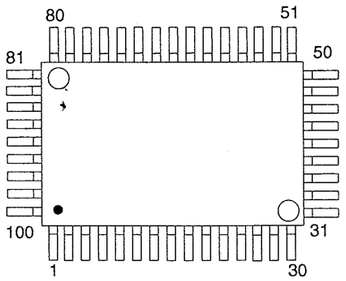
QSMAC0RMB037



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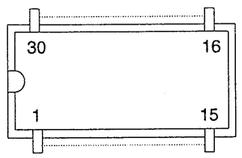
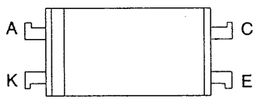


LTV-817C-F
LTV-817B-F
PC-17T1



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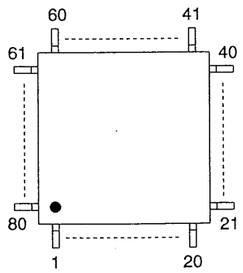

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference0
S: Source
G: Gate
D: Drain

DECK MECHANISM SECTION

VIDEO CASSETTE RECORDER

VT-FX6500A
VT-FX6500AC
VT-MX4530A

DECK MECHANISM SECTION

- **Standard Maintenance**
- **Mechanical Alignment Procedures**
- **Disassembly/Assembly of Mechanism**
- **Alignment for Mechanism**

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STANDARD MAINTENANCE

Service Schedule of Components

h: Hours ○: Check ●: Change

Deck		Periodic Service Schedule			
Ref. No.	Part Name	1,000 h	2,000 h	3,000 h	4,000 h
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B27	Tension Lever Sub Assembly		●		●
B31	AC Head Assembly			●	
B32, B339	Reel T Assembly, Reel S Assembly			●	
B37	Capstan Motor		●		●
B52	Capstan Belt		●		●
*B73	FE Head CBA			●	
B133	Idler Assembly		●		●
B410	Pinch Arm (A) Assembly		●		●
B414	Main Brake S Assembly		●		●
B416	Main Brake T Sub Assembly		●		●
B525	Loading Belt (B)		●		●

Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

   * B73 ------ VCR Model only

Cleaning

Cleaning of Video Head

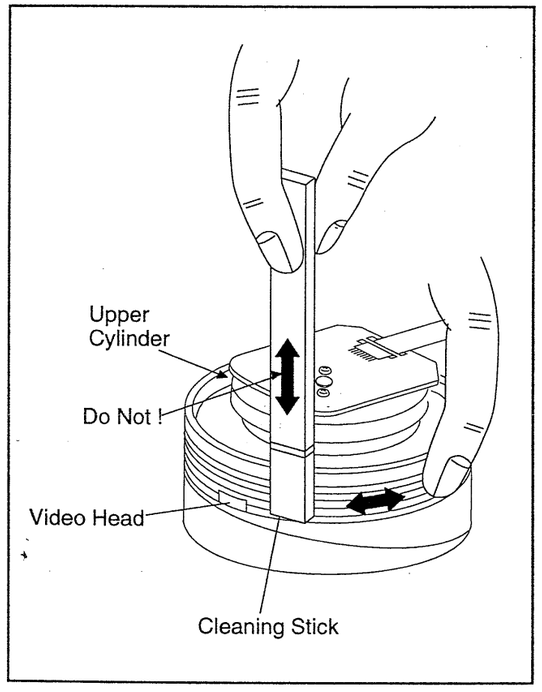
Clean the head with a head cleaning stick or chamois cloth.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



Cleaning of Audio Control Head

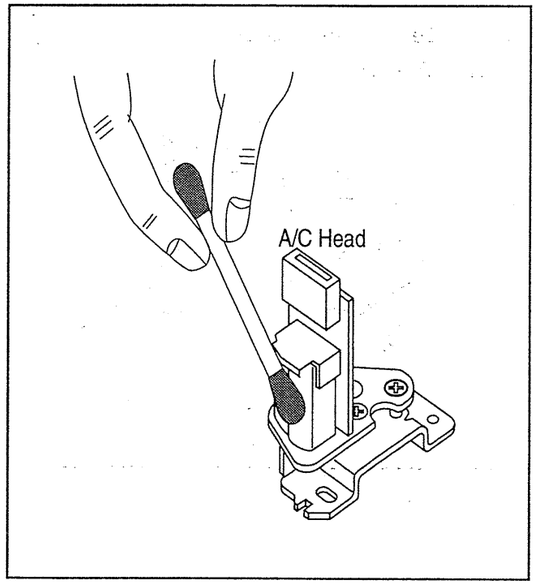
Clean the head with a cotton swab.

Procedure

1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

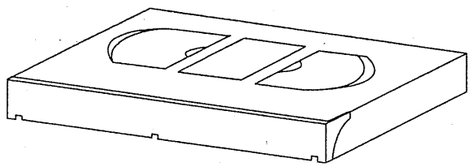
Notes:

1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.

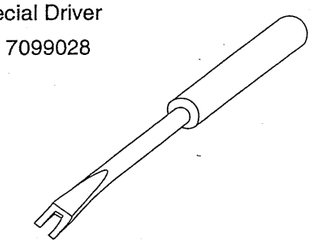


FIXTURE AND TAPE FOR ADJUSTMENT

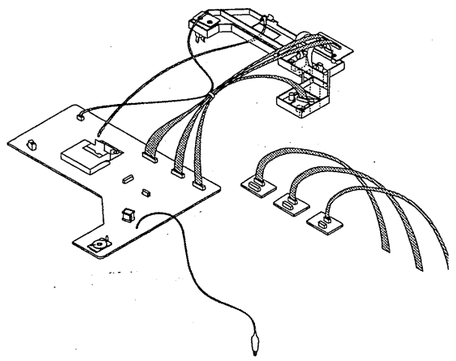
1. Alignment Tape
   No. 7099046 (MH-1)
   No. 7099089 (30HMP2-1)



2. Special Driver
   No. 7099028



3. U21 Deck Extension Cable
   No. TP12141



How To Use The Fixtures And Tape

Item No.	Name	Part No.	How to used
1	Alignment Tape	7099046 7099089	● Head Switching Point ● Tape Interchangeability Alignment
2	Special Driver	7099028	● Guide Roller
3	U21 Deck Extension Cable	TP12141	● All Mechanical and Electrical Adjustments

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt (B) in the appropriate direction shown in Fig. M1 until the First Gear starts turning. Stop turning the LDG Belt (B). Then, turn the First Gear in the appropriate direction continuously. However, movement of the Cam Gear will be very slow. Allow a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover and Front Assembly.
3. Make sure that the Moving guide assemblies are in the Eject Position. When the Moving guide assemblies are in the Loading Position, go to step 4. When the Moving guide assemblies are in the Eject Position, go to step 6.
4. First, turn the LDG Belt (B) in the appropriate direction shown in Fig. M1 until the First Gear starts turning.
5. Stop turning the LDG Belt (B) immediately after the First Gear starts turning.
6. Turn the First Gear in the appropriate direction until Moving guide assemblies come to the Eject Position. Stop turning when the assemblies begin clicking or can not be moved further. However, the tape will be left wound around the cylinder.
7. Turn the LDG Belt (B) in the appropriate direction continuously, and the cassette tape will be ejected. As stated, movement of the Cam Gear will be very slow. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Cover and Front Assembly.
3. Turn the LDG Belt (B) in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the LDG Belt (B) until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Top View

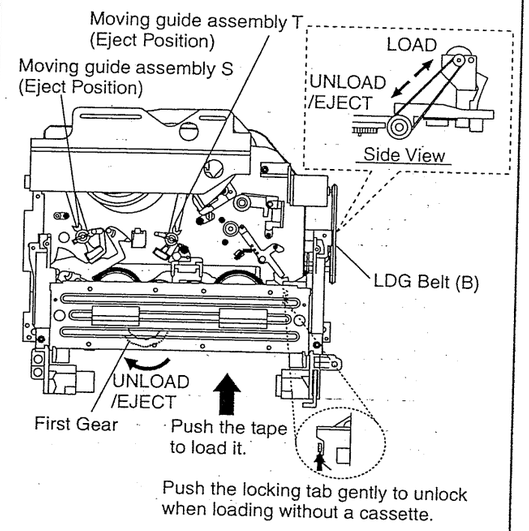


Fig. M1

Bottom View

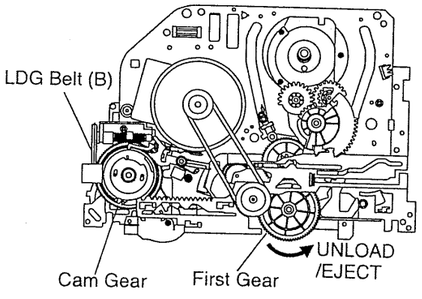


Fig. M2

1. Tape Interchangeability Alignment

Note:

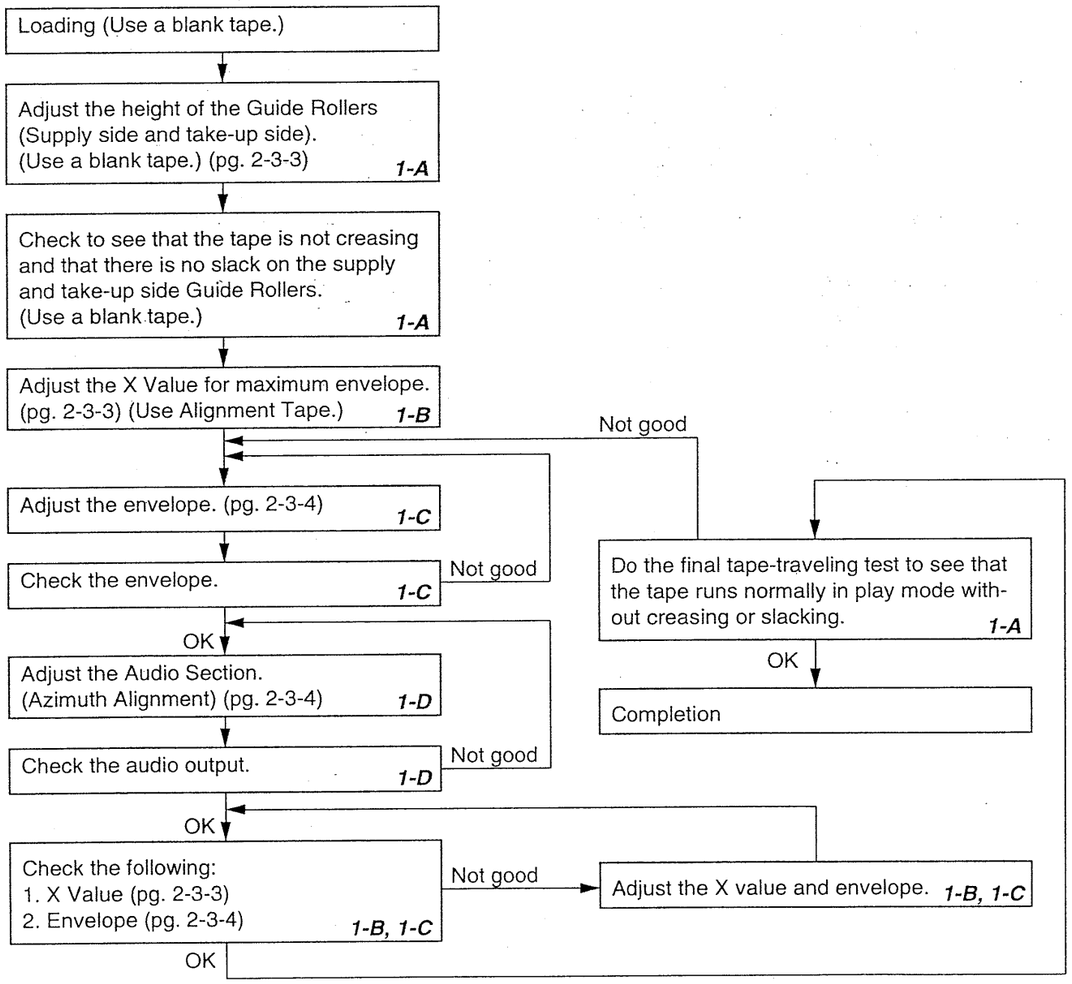
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (30HMP2-1 or MH-1)
Guide Roller Adj. Screwdriver
X-Value Adj. Screwdriver

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling


Loading (Use a blank tape.)
Adjust the height of the Guide Rollers (Supply side and take-up side). (Use a blank tape.) (pg. 2-3-3) 1-A
Check to see that the tape is not creasing and that there is no slack on the supply and take-up side Guide Rollers. (Use a blank tape.) 1-A
Adjust the X Value for maximum envelope. (pg. 2-3-3) (Use Alignment Tape.) 1-B
Not good
Adjust the envelope. (pg. 2-3-4) 1-C
Check the envelope. 1-C
Not good
OK
Adjust the Audio Section. (Azimuth Alignment) (pg. 2-3-4) 1-D
Check the audio output. 1-D
Not good
OK
Check the following:
1. X Value (pg. 2-3-3)
2. Envelope (pg. 2-3-4) 1-B, 1-C
Not good
Adjust the X value and envelope. 1-B, 1-C
OK
Do the final tape-traveling test to see that the tape runs normally in play mode without creasing or slacking. 1-A
OK
Completion

1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape path is unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Play back a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)
   Note: Beneath each Guide Roller, there is a small screw. (Refer to Fig. M5.) This screw works to apply adequate torque to the shaft of each Guide Roller so that the Guide Roller turns properly. Even when adjusting the height of the Guide Roller(s), do not touch these two small screws.
3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and AC Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the AC Head. (Fig. M6)

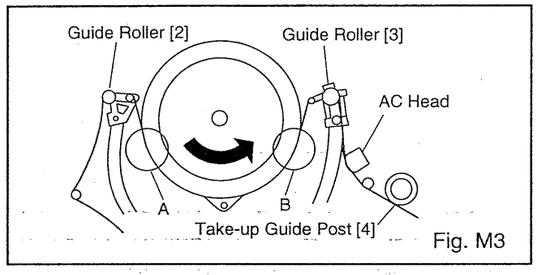


Fig. M3

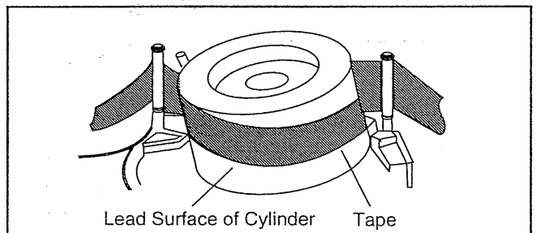


Fig. M4

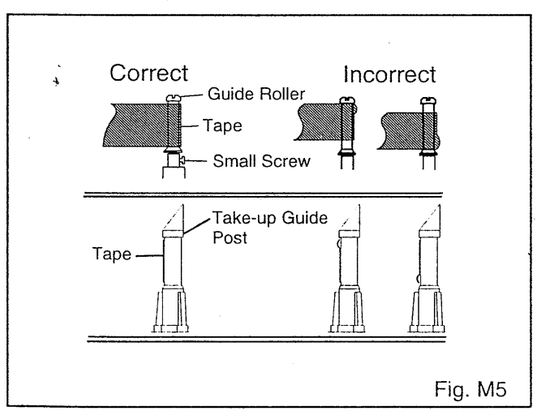


Fig. M5

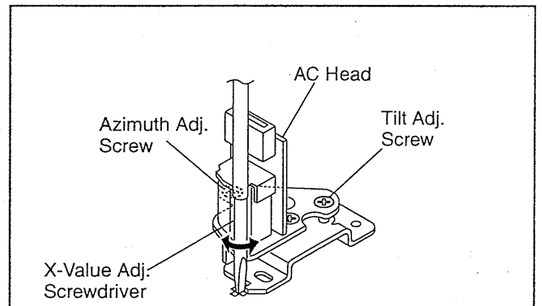


Fig. M6

1-B. X Value Alignment

Purpose:

To align the Horizontal Position of the Audio/Control/Erase Head.

Symptom of Misalignment:

If the Horizontal Position of the Audio/Control/Erase Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) and TP303 (CTL) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Play back the Gray Scale of the Alignment Tape (30HMP2-1 or MH-1) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the center position by pressing the CH UP button then the PLAY button on the VCR. (Refer to note on bottom of page 2-3-4.)
4. Use the X-Value Adj. Screwdriver so that the PB FM signal at TP301 (C-PB) is maximum. (Fig. M6)
5. Press CH UP button on the VCR until the CTL waveform has shifted by approx. +2ms. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.

6. Press CH DOWN button on the VCR until the CTL waveform has shifted from its original position (not the position achieved in step 5, but the position of CTL waveform in step 4) by approximately -2ms. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.
7. Set the Tracking Control Circuit to the center position by pressing the CH UP button and then the PLAY button on the VCR.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture and precise tracking.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Play back the Gray Scale on the Alignment Tape (30HMP2-1 or MH-1). Set the Tracking Control Circuit to the center position by pressing the CH UP and then the PLAY button on the VCR. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-3-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
4. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
5. When Guide Rollers [2] and [3] (Refer to Fig.M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes UP to achieve 1/2 level of envelope should match the number of pushes DOWN from center. If required, redo the "X Value Alignment."

1-D. Azimuth Alignment of Audio/Control/Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the alignment tape (30HMP2-1 or MH-1) and confirm that the audio signal output level is 8 kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)

Dropping envelope level at the beginning of track.

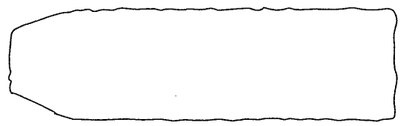


Fig. M7

Dropping envelope level at the end of track.

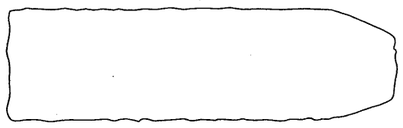


Fig. M8

Envelope is adjusted properly. (No envelope drop)

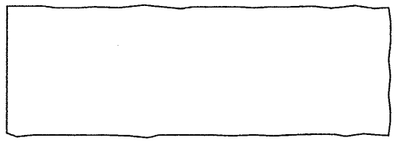


Fig. M9

DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Main Mechanism

Before following the procedures described below, be sure to:

1. Remove the deck assembly from the cabinet.
   (Refer to CABINET DISASSEMBLY INSTRUCTIONS on page 1-6-1
2. Remove Front Loading Assembly from main mechanism of the deck assembly. (See Fig. DM3)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [43] and [44] in Fig. DM1 on page 2-4-3. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[0]	[0]	Joint Holder B	T	DM3	(S-1)	
[1]	[0]	Front Loading Assembly	T	DM3	2(S-2), Rec Arm	(+) Refer to Alignment Sec. Pg. 2-4-11
[2]	[2]	Cylinder Shield	T	DM3	2(S-3)	
[3]	[3]	Deck Grounding Plate	T	DM3	(S-4)	
[4]	[2]	Cylinder Assembly	T	DM1, DM4	3(S-5), VH Connector A and B, ACH Connector AN(7P) and B(7P)	
[5]	[5]	Loading Motor Assembly	T	DM1, DM5	(S-6), LDG Belt (B), ACH Connector AN(9P) and B(9P)	
[6]	[5]	Loading Motor Holder	T	DM1, DM5	2(S-7), *(L-1)	
[7]	[5]	AC Head Assembly	T	DM1, DM6	2(S-8)	
[8]	[8]	Tape Guide Assembly	T	DM1, DM6	*(P-1), *(P--2), (C-1)	
[9]	[9]	Door Opener B	T	DM1, DM6	(S-9), *(L-2)	
[10]	[9]	Pinch Arm (A) Assembly	T	DM1, DM6	*(P-3)	
[11]	[10]	Pinch Arm (B) Assembly	T	DM1, DM6	E ring	
[12]	[8]	Capstan Motor	B	DM2, DM7	3(S-10), Capstan Belt	
[13]	[13]	Cam Gear (B)	B	DM2, DM8	(C-2)	
[14]	[14]	Center Pulley	B	DM2, DM8	(C-3)	
[15]	[15]	M Lever Holder	B	DM2, DM8	(C-4)	
[16]	[15]	F Brake Assembly	B	DM2, DM8	(S-11), *(P-4)	
[17]	[17]	Insulation Cap A	T	DM1, DM9	(S-12)	
[18]	[17]	Mode Lever Holder A	B	DM2, DM9	(S-13)	
[19]	[13]	Mode Lever A Assembly	B	DM2, DM9	*2(L-3)	
[20]	[18]	Mode Gear	B	DM2, DM9	(C-5), (W-1)	(+) Refer to Alignment Sec. Pg. 2-4-10
[21]	[13]	Cam Gear (A)	B	DM2, DM9		
[22]	[20]	Pulley Assembly	B	DM2, DM9		
[23]	[21]	Worm Holder	B	DM2, DM9	(S-14)	
[24]	[23]	Insulator Cap B	T	DM1, DM10	(S-15), *(P-5)	
[25]	[24]	First Post Assembly	T	DM1, DM10	(S-16)	
[26]	[25]	FE Head	T	DM1, DM10	(S-17)	
[27]	[26]	Prism	T	DM1, DM10	(S-18)	
[28]	[12]	TG Post Assembly	T	DM1, DM10	(S-19), *(L-4)	

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[29]	[28]	M Brake T Assembly	T	DM1, DM11	*(P-6)	
[30]	[18]	M Brake S Assembly	T	DM1, DM11	*(L-5)	
[31]	[30]	Tension Lever Assembly	T	DM1, DM11	*(P-7), (C-6)	
[32]	[31]	Tension Lever Sub Assembly	T	DM1, DM11		
[33]	[31]	Reel S Assembly	T	DM1, DM11	(C-7), Poly Slider Washer	
[34]	[29]	Reel T Assembly	T	DM1, DM11	(C-8), Poly Slider Washer	
[35]	[33]	Reel Shaft	T	DM1, DM11	2(S-20)	
[36]	[18]	First Gear	B	DM2, DM12	(C-9)	
[37]	[36]	Second Gear	B	DM2, DM12	(C-10), (W-2)	
[38]	[37]	FF Arm	T	DM1, DM13		
[39]	[37]	Idler Assembly	T	DM1, DM13		
[40]	[37]	BT Arm Assembly	B	DM2, DM14		
[41]	[19]	Loading Arm T Assembly	B	DM2, DM14	(C-11)	(+) Refer to Alignment Sec. Pg. 2-4-10
[42]	[41]	Loading Arm S Assembly	B	DM2, DM14		(+) Refer to Alignment Sec. Pg. 2-4-10
[43]	[2]	Moving Guide S Preparation	T	DM1, DM15		
[44]	[2]	Moving Guide T Preparation	T	DM1, DM15		
↓ ①	↓ ②	↓ ③	↓ ④	↓ ⑤	↓ ⑥	↓ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as Identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column (1).

③: Name of the part

④: Location of the part: T=Top B=Bottom R=Right L=Left

⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).

⑦: Adjustment Information for Installation
(+): Refer to Deck Exploded Views for lubrication.

Top View

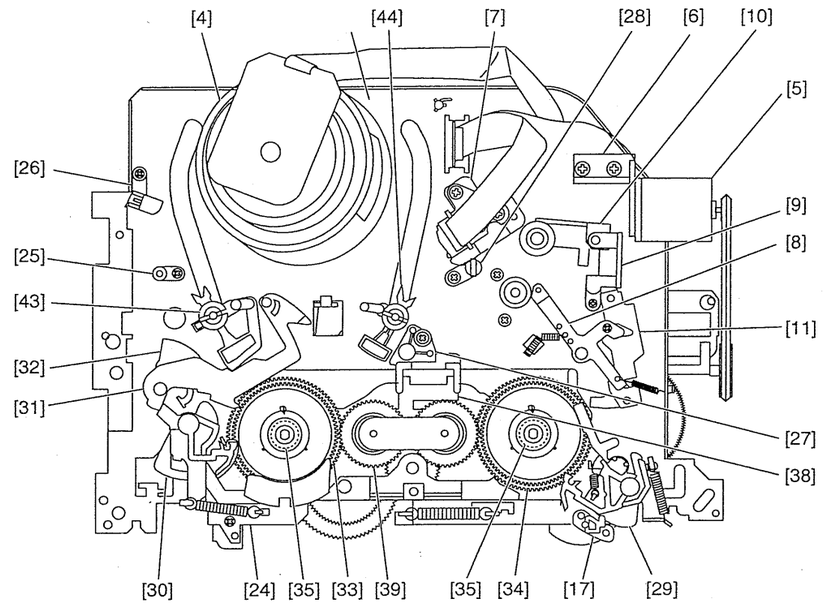


Fig. DM1

Bottom View

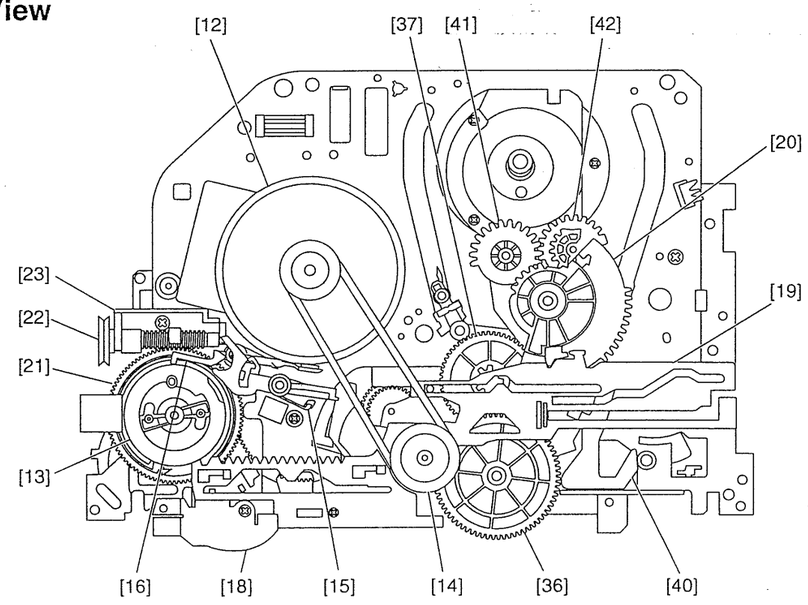
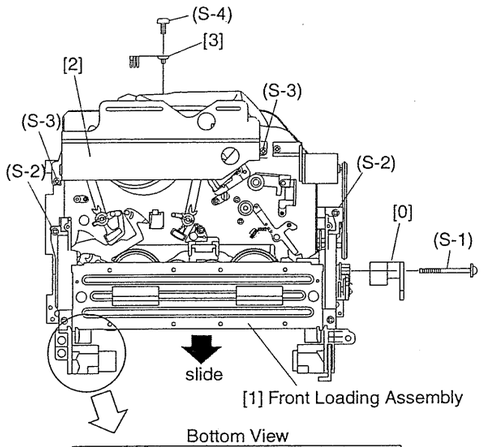
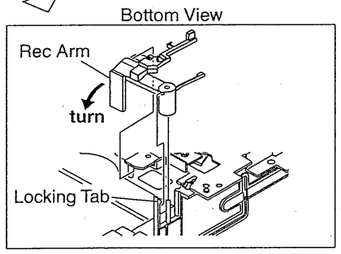


Fig. DM2





To remove Front Loading Assembly:
1. Remove Rec Arm while releasing Locking Tab as shown.
2. Remove Screw (S-1) and [0] Joint Holder B.
3. Remove Screw 2(S-2).
4. Lift it up slightly and then, slide Front Loading Assembly.

Fig. DM3

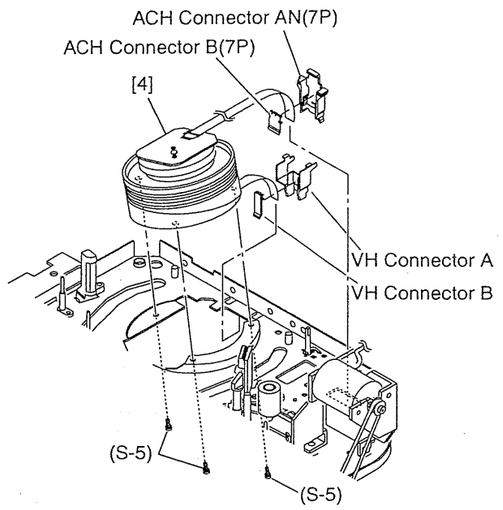


Fig. DM4

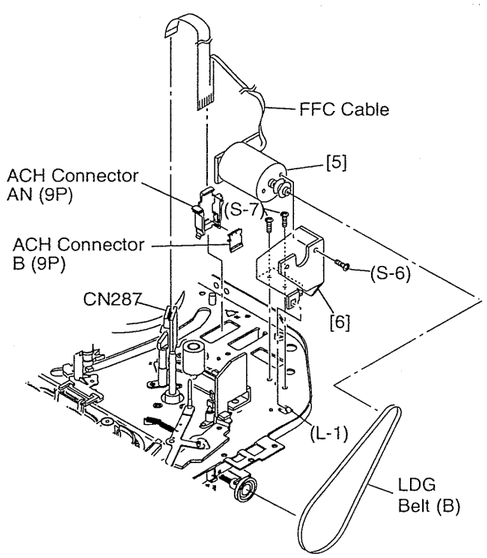
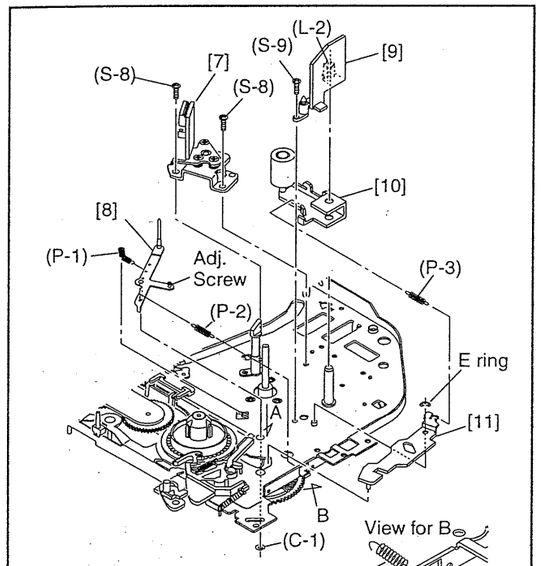
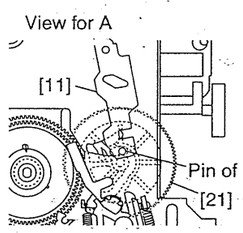


Fig. DM5





When reassembling [11], confirm that pin of [11] is in the groove of [21] as shown.

Fig. DM6

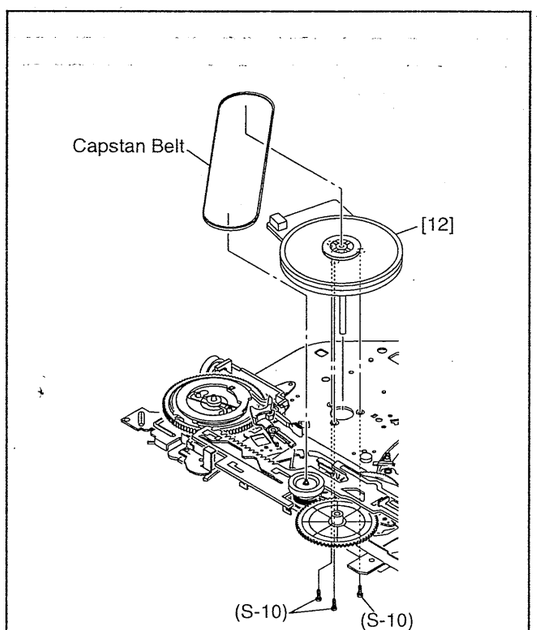
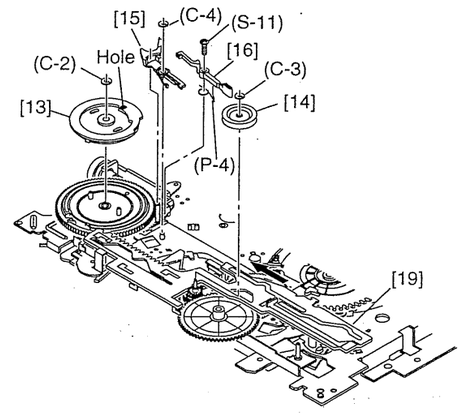


Fig. DM7



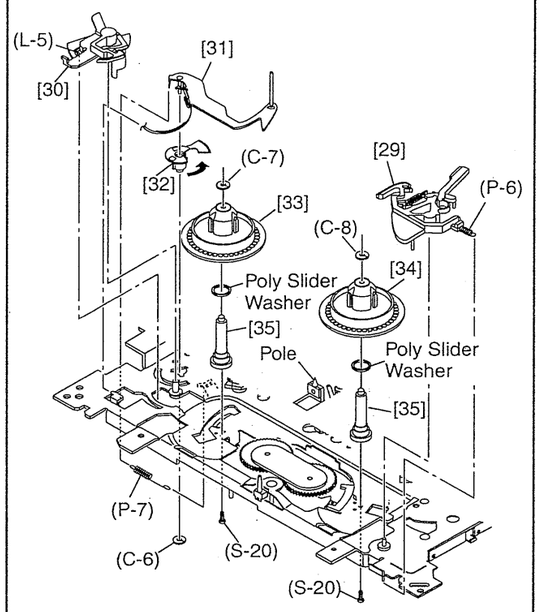
When reassembling [13], confirm that the hole on [13] is in the correct position as shown.
After reassembling [13], be sure to slide [19] until the left edge of [19] touches [13] as shown in Fig. DM7.

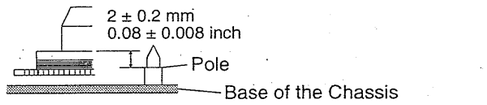
Fig. DM8

When reassembling [21], confirm that the hole on [21] is in the correct position as shown.

Position of Mode Lever when installed

Fig. DM9





If the alignment height is not correct, it is acceptable to use one more Poly Slider Washer to raise the height. (Poly Slider Washer is 0.1 mm/0.004 inch in thickness.)

Fig. DM11

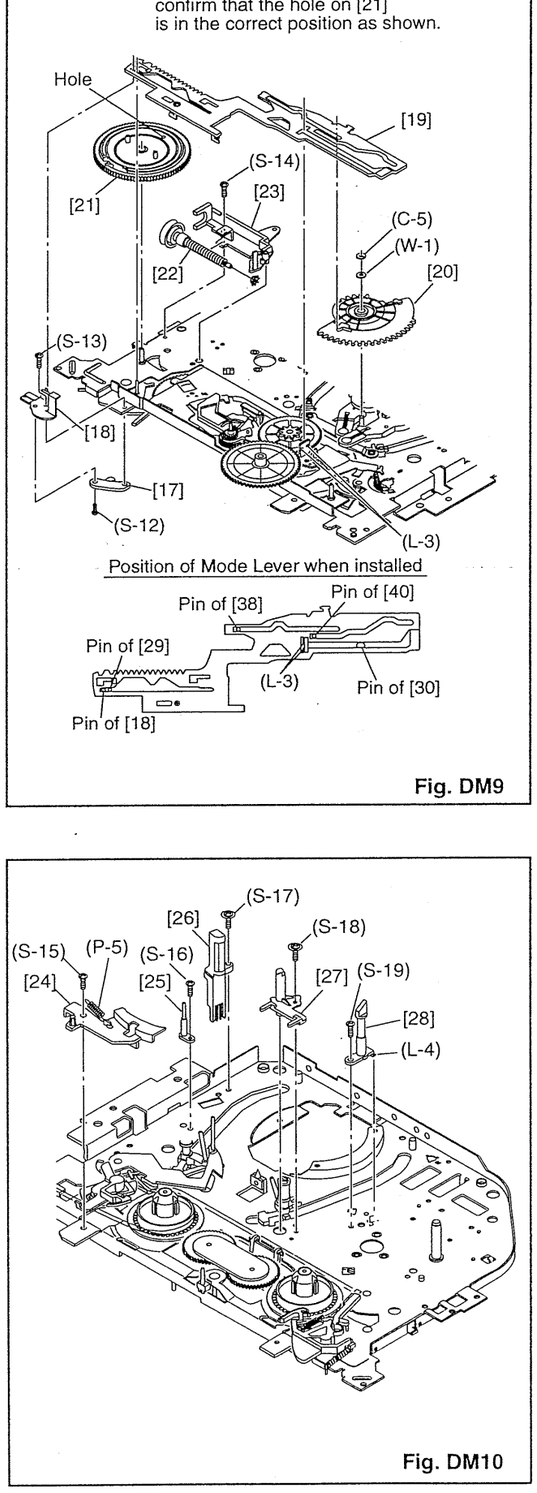


Fig. DM10

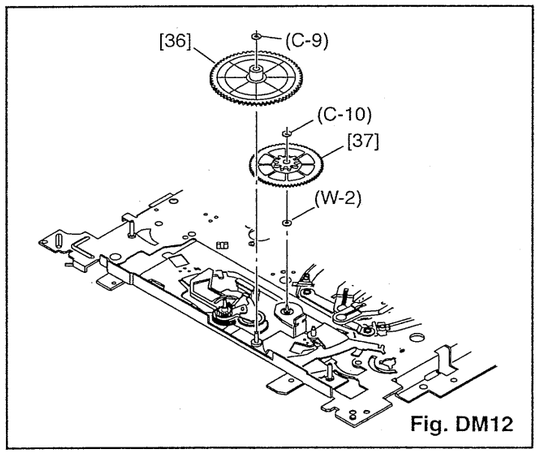


Fig. DM12

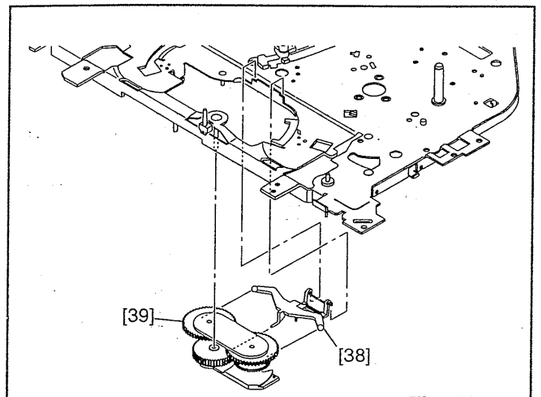


Fig. DM13

Refer to the Alignment Section, Page 2-4-10.

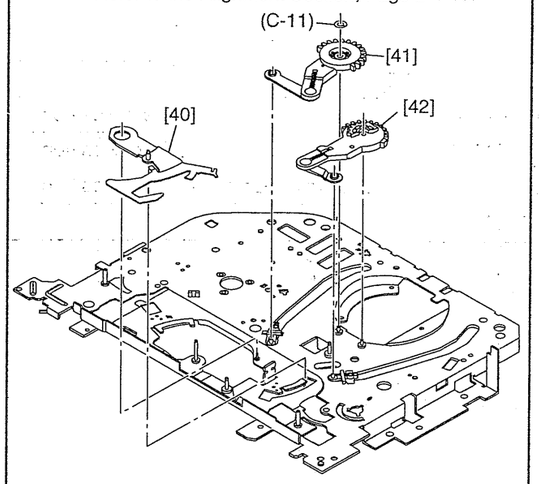


Fig. DM14

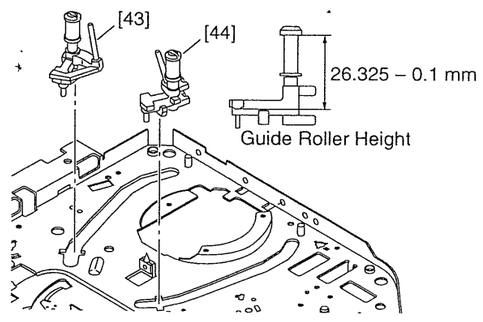


Fig. DM15

Front Loading Assembly

Before following the procedures described below, be sure to remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM3.) When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder	T	DM17	2(S-1), *2(L-1)	
[2]	[1]	Slider Gear	L, R	DM16, DM17	*4(L-2)	Eject Position
*[3]	[2]	Slider Shaft	T	DM16, DM17		Eject Position
[4]	[4]	Cassette Plate	T	DM17	2(S-2)	
[5]	[4]	Slider L	T	DM17		
[6]	[4]	Slider R	T	DM17	(S-3)	
[7]	[6]	Door Opener A	R	DM17		
[8]	[8]	Lock Lever	B	DM17	(S-4), *(P-1)	
[9]	[3]	Cassette Guide R	R	DM17		
[10]	[3]	Cassette Guide L	L	DM17		
[11]	[11]	Joint Holder A	R	DM17	(S-5), *(P-2)	
[12]	[11]	Cassette Drive Sub Gear	R	DM17, DM18		Eject Position
[13]	[11]	Cassette Drive Gear	R	DM17, DM18		Eject Position
[14]	[13]	Cassette Drive Lever	R	DM17	Cassette Drive Spring	Eject Position
[15]	[14]	Front Door Opener	R	DM17, DM18	*(L-3)	
↓ ①	↓ ②	↓ ③	↓ ④	↓ ⑤	↓ ⑥	↓ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as Identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column (1).

③: Name of the part

④: Location of the part: T=Top B=Bottom R=Right L=Left

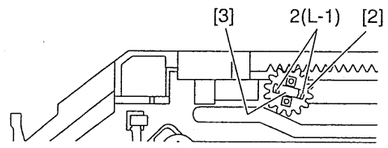
⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).

⑦: Adjustment Information for Installation
(+): Refer to Deck Exploded Views for lubrication.

*[3]: They are divided into two steps because, before reassembling Slider Shaft, one Slider Gear must be preinstalled at either end of Slider Shaft.

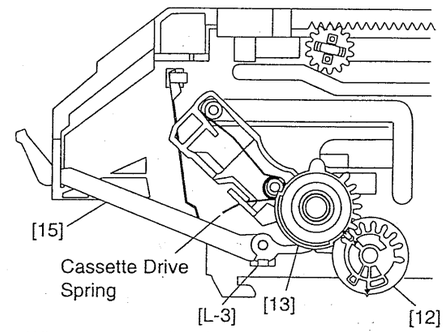
View before disassembling [2] and [3]
(Installation of Slider Shaft and Slider Gear)



Install [2] and [3] in Eject position.
(When disassembling, [2] and [3] can be removed either in Eject position or Cassette-in position.)

- This figure shows where [2], [3] and other parts are in Eject position.

Fig. DM16



When reassembling [12] and [13], refer to the Alignment Section, Pg. 2-4-11.

- This figure shows where [12], [13], [15] and other parts are in Eject position.

Fig. DM18

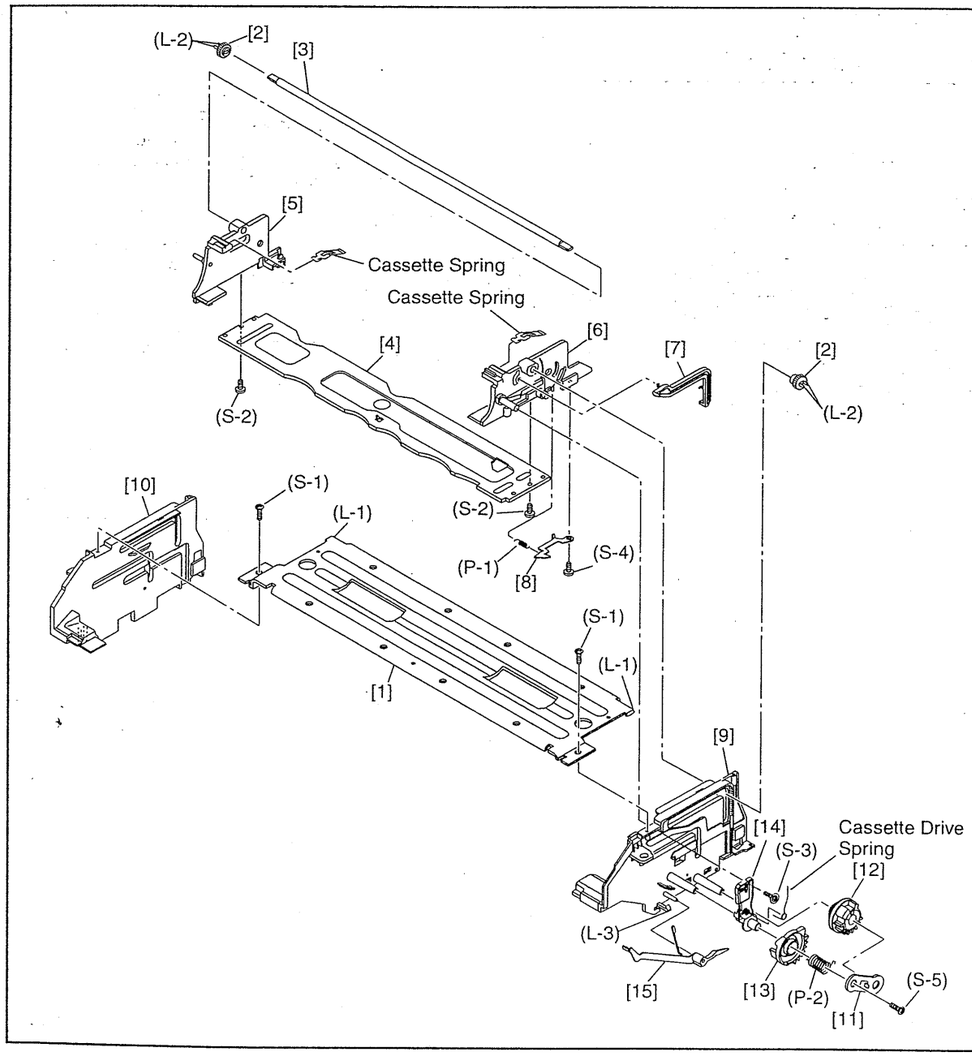


Fig. DM17

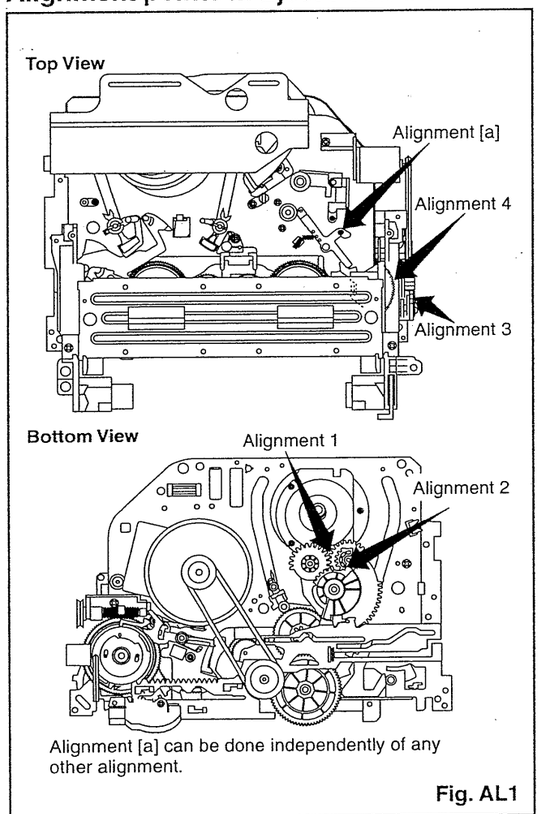
ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.
All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position



Alignment [a] can be done independently of any other alignment.

Fig. AL1

Alignment 1

Loading Arm, S and T Assembly

Install Loading Arm S and T Assembly so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Mode Gear

Keeping the two triangles pointing at each other, install the Loading Arm T Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.

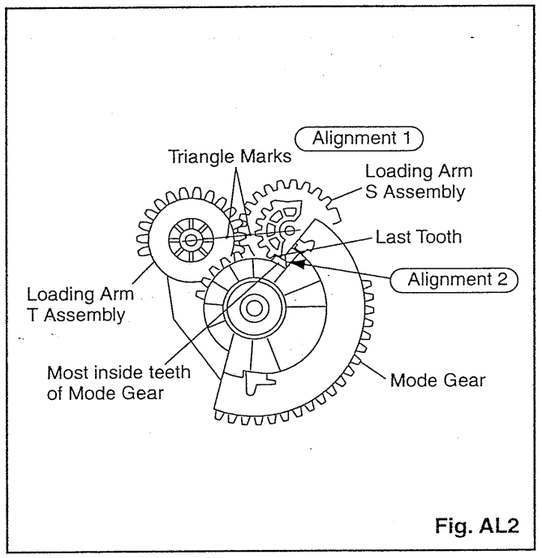


Fig. AL2

Alignment [a]

Tape Guide Arm Assembly

Measurement of the screw must be as specified in Fig. AL3.

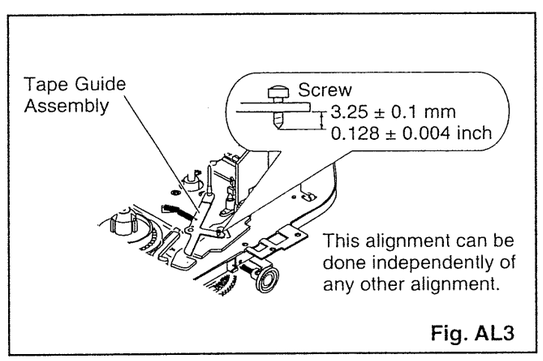


Fig. AL3

Alignment 3

Cassette Drive Gear, Cassette Drive Sub Gear

Install the Cassette Drive Gear and Cassette Drive Sub Gear so that their triangle marks point to each other as shown in Fig. AL4.

Alignment 4

Cam Gear (A), Cassette Drive Sub Gear

Install the Front Loading Assembly so that the triangle mark of Cassette Drive Sub Gear is aligned with the indent of the Cam Gear (A) as shown in Fig. AL4.

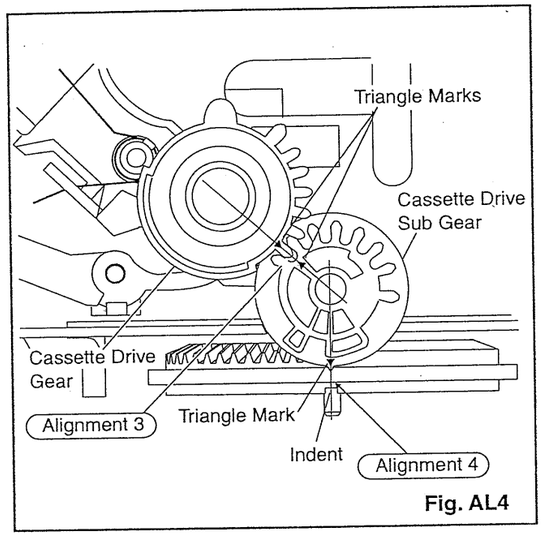


Fig. AL4

EXPLODED VIEWS AND PARTS LIST SECTION

VIDEO CASSETTE RECORDER

VT-FX6500A
VT-FX6500AC
VT-MX4530A

EXPLODED VIEWS AND PARTS LIST SECTION
- **Exploded views**
- **Parts List**

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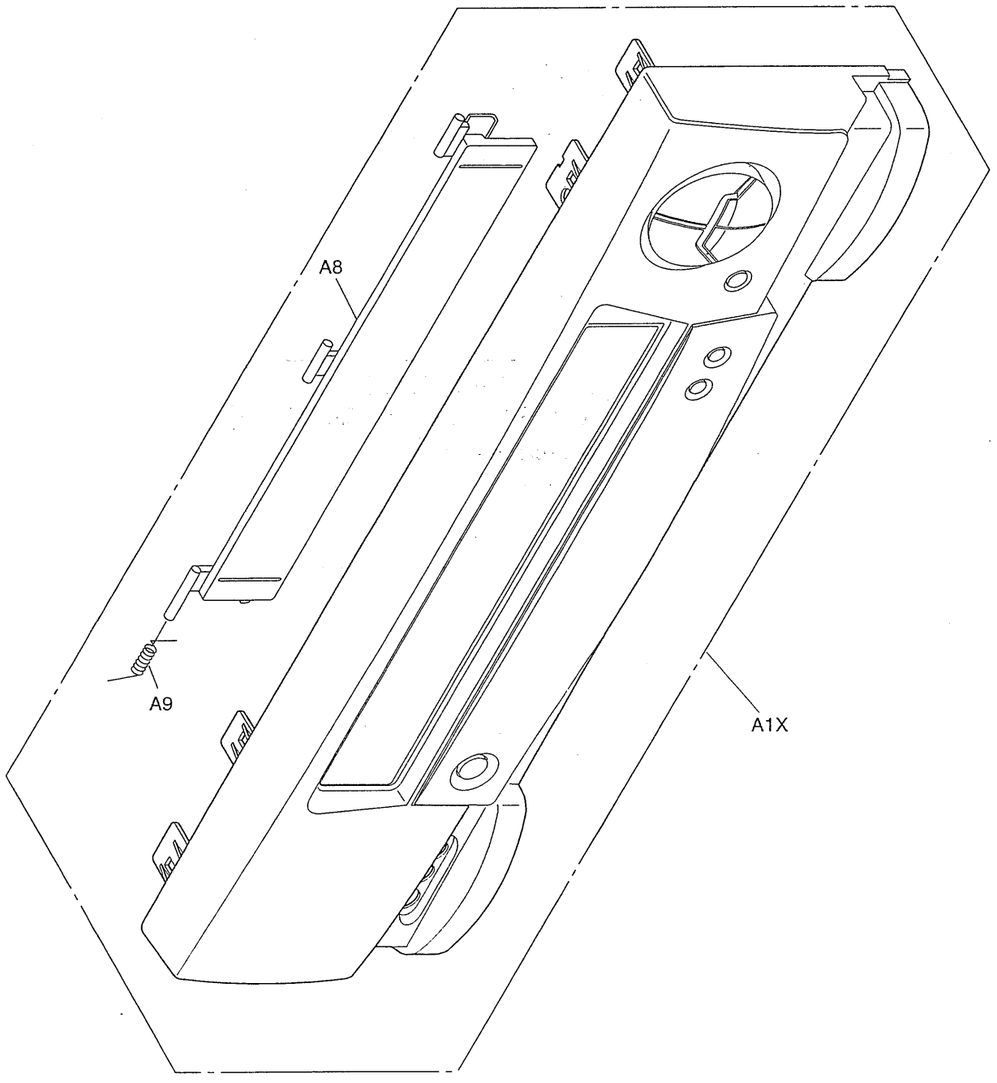
Mechanical Parts List 3-2-1
Electrical Parts List 3-3-1

EXPLODED VIEWS

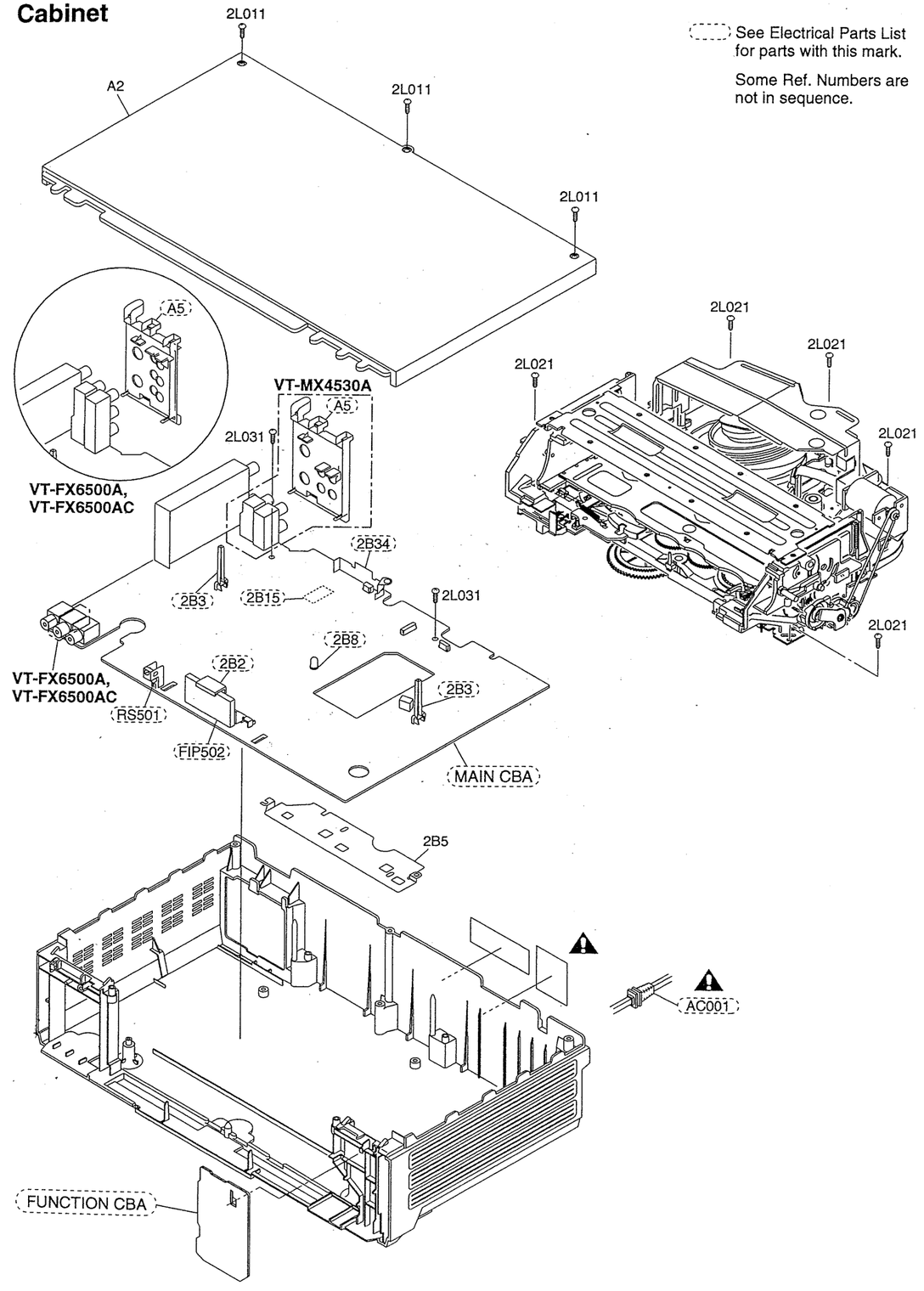
Front Panel



Cabinet

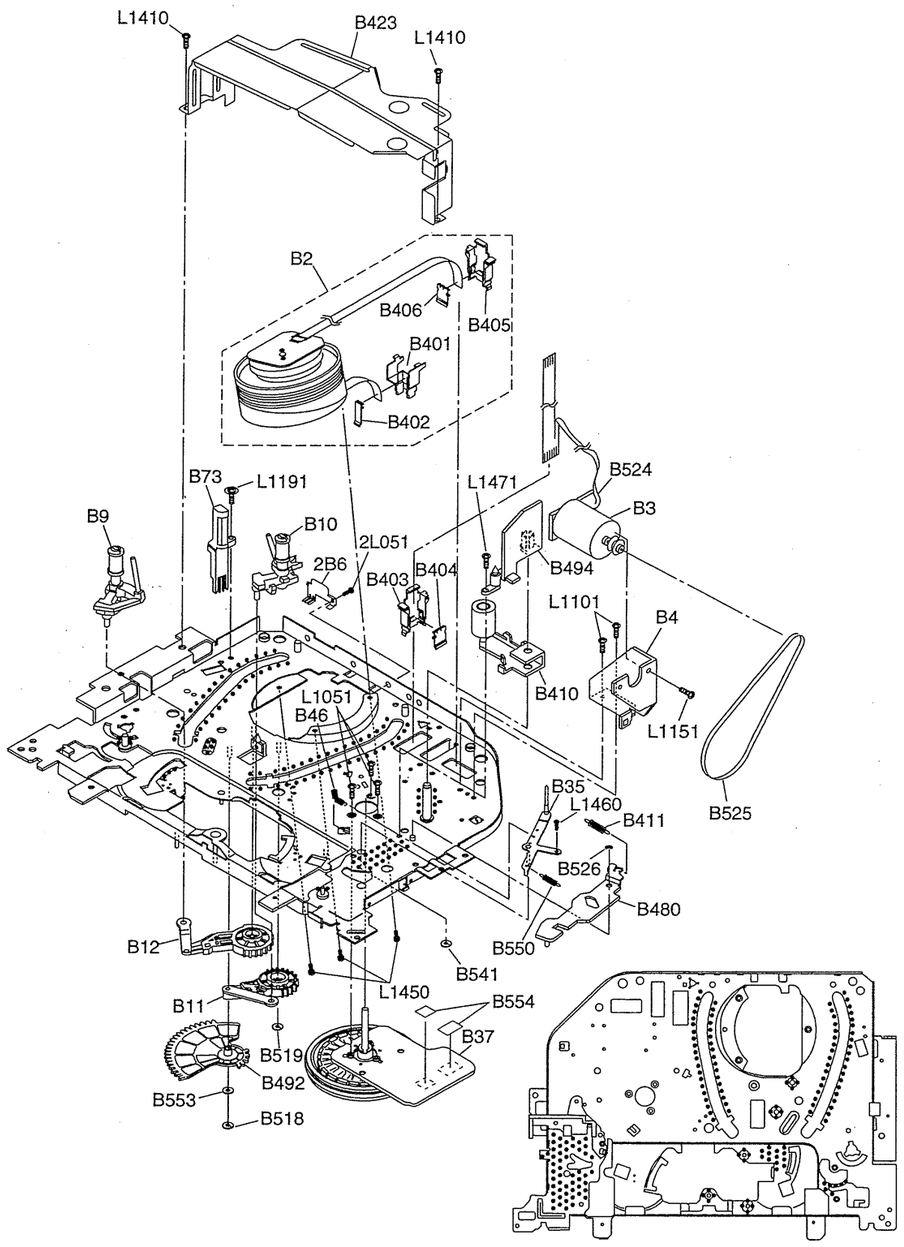
( ) See Electrical Parts List for parts with this mark.

Some Ref. Numbers are not in sequence.



Deck Mechanism View 1

Mark	Description	Part No.
•••••	Floil G-374G (Blue grease)	0VZZ00109

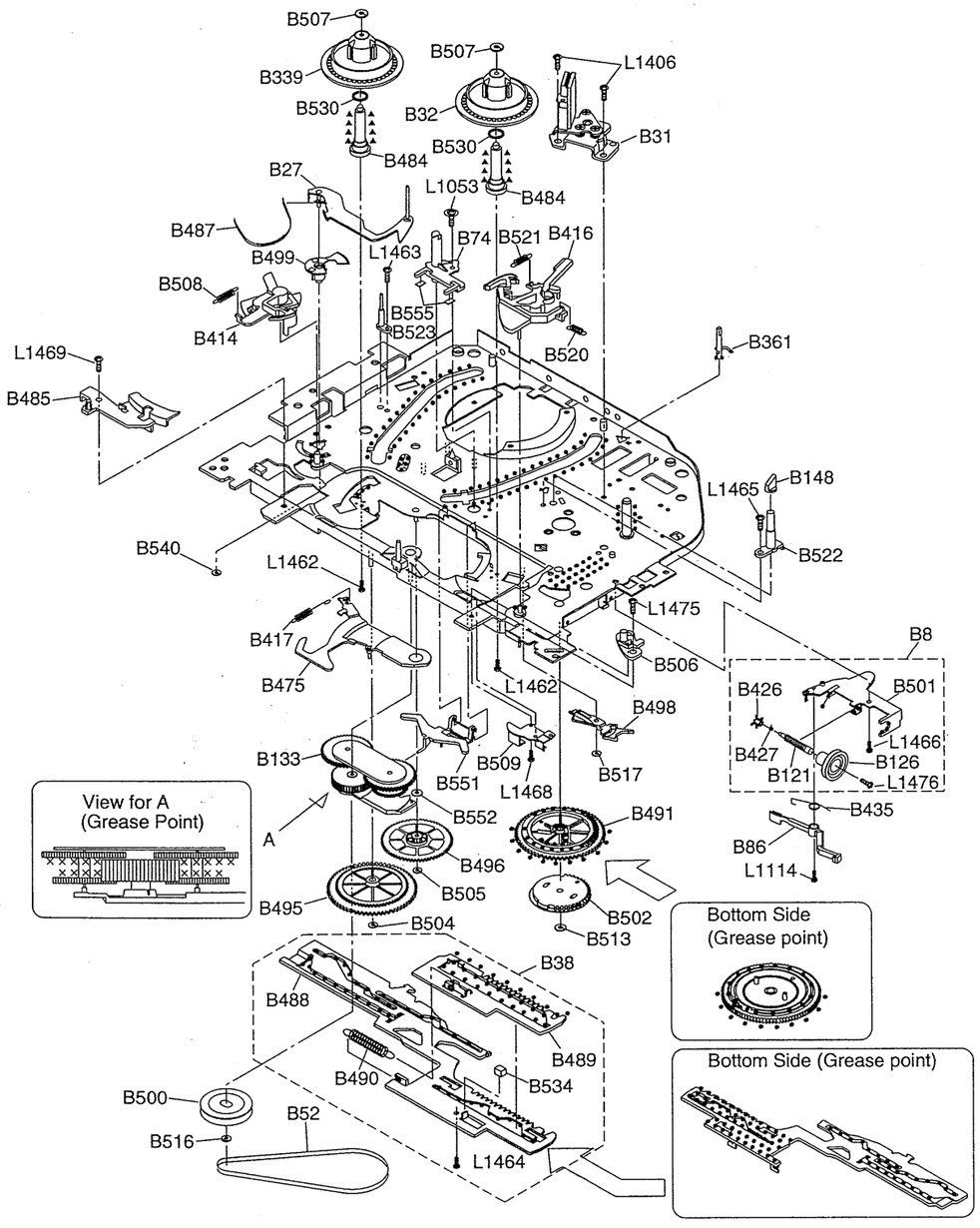


Some Ref. Numbers are not in sequence.

Chassis Assembly Bottom View (Grease Point)

Deck Mechanism View 2

Mark	Description	Part No.
×××××	Sankol FG-84M (White grease)	0VZZ00062
•••••	Floil G-374G (Blue grease)	0VZZ00109
▲▲▲▲▲	Hydro-Fluid EP56 (Spindle oil)	0VZZ00068

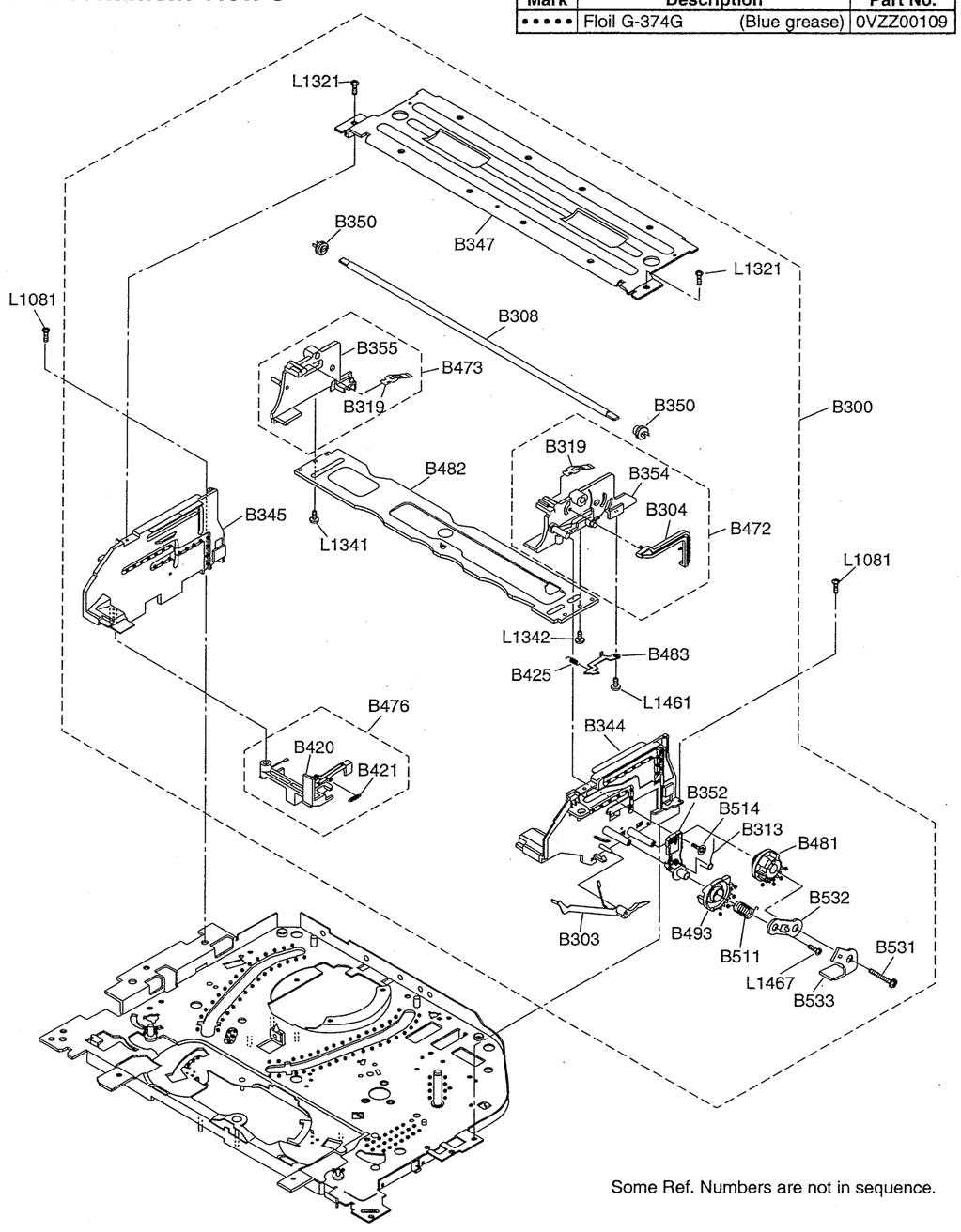


B359, B360 and B529: See the Mechanical Parts List.

Some Ref. Numbers are not in sequence.

Deck Mechanism View 3

Mark	Description	Part No.
•••••	Floil G-374G (Blue grease)	0VZZ00109



Some Ref. Numbers are not in sequence.

MECHANICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	
		MECHINISM SECTION	
2B2	TE12838	BRAKE LEVER SPRING	
2B3	TJ13885	HOLDER,SENSOR	
2B5	TJ13874	SHIELD,PLATE	
2B6	TJ13937	PLATE,DECK	
2B8	TE13012	BUSH,LED(E)	
2B34	TJ13886	PLATE,EARTH	
⚠AC001	TJ13888	CORD,AC	
2L011	TE13193	SCREW (3X10)	
2L021	TJ10119	SCREW(3X10)	
2L031	TJ10177	SCREW (3X8)	
2L051	TJ10176	SCREW (3X6)	
A1X	TJ14068	PANEL,FRONT	[MX4530A]
A1X	TJ14069	PANEL,FRONT	[FX6500A/FX6500AC]
A2	TJ13872	COVER,TOP	
A5	TJ13887	PLATE,JACK	
A8	TJ13873	DOOR,CASSETTE	[MX4530A]
A8	TJ14071	DOOR,CASSETTE	[FX6500A/FX6500AC]
A9	TJ13672	SPRING,DOOR	
B2	TJ13938	CYLINDER ASSY	[MX4530A]
B2	TJ14097	CYLINDER ASSY	[FX6500A/FX6500AC]
B3	TJ13941	MOTOR,LOADING	
B4	TJ13943	HOLDER.MOTOR	
B8	TJ13944	PULLEY ASSY	
B9	TJ13945	GUIDE,MOVING(S)	
B10	TJ13946	GUIDE,MOVING(T)	
B11	TJ13947	ARM,LOADING	
B12	TJ13948	ARM,LOADING	
B27	TJ13949	LEVER,TENSION	
B31	TJ13951	HEAD,AC	
B32	TJ13952	REEL	
B35	TJ13953	GUIDE,TAPE	
B37	TJ13954	MOTOR,CAPSTAN	
B38	TJ13955	LEVER,MODE	
B46	TJ13956	SPRING	
B52	TJ13957	BELT	
B73	TJ13958	HEAD,FE	
B74	TJ13959	PRISM	
B86	TJ13961	BRAKE	
B121	TJ13962	WORM	
B126	TJ13963	PULLEY	
B133	TJ13964	IDLER ASSY	
B148	TE12612	TG CAP	
B300	TJ13965	FL ASSY	
B303	TJ13966	DOOR,OPNER (F)	
B304	TJ13967	DOOR,OPNER	
B308	TE13268	SHAFT,SLIDER	
B313	TJ13968	SPRING	
B319	TJ13969	SPRING	
B339	TJ14098	REEL	
B344	TJ13972	GUIDE,CASSETTE	
B345	TJ13973	GUIDE,CASSETTE	
B347	TJ13974	HOLDER,GUIDE	
B350	TE13276	GEAR,SLIDER	
B352	TJ13975	LEVER,DRIVE	
B354	TJ13976	SLIDER	
B355	TJ13977	SLIDER	
B361	TJ13978	POST	
B401	TJ13979	CONNECTOR	[MX4530A]
B401	TJ14099	CONNECTOR	[FX6500A/FX6500AC]
B402	TJ13981	CONNECTOR	[MX4530A]
B402	TJ14281	CONNECTOR	[FX6500A/FX6500AC]
B403	TJ13984	CONNECTOR	
B404	TJ13985	CONNECTOR	
B405	TJ13982	CONNECTOR	
B406	TJ13983	CONNECTOR	
B410	TJ13986	ARM,PINCH	
B411	TJ13987	SPRING	
B414	TJ13988	BRAKE	
B416	TJ14282	BRAKE	
B417	TJ13991	SPRING	
B420	TJ13992	ARM,REC	
B421	TE12407	SPRING	
B423	TJ13993	SHIELD,CYLINDER	
B425	TJ13994	LEVER,LOCK	
B426	TJ13995	PULLEY	
B427	TJ13996	SPRING	
B435	TJ13997	BRAKE	
B472	TJ13998	SLIDER	
B473	TJ13999	SLIDER	
B475	TJ14001	ARM	
B476	TJ14002	ARM,REC	
B480	TJ14003	ARM,PINCH	
B481	TJ14004	DRIVE	
B482	TJ14005	PLATE,CASSETTE	
B483	TJ14006	LEVER,ROCK	
B484	TJ14007	REEL,SHAFT	
B485	TJ14008	CAP,INSULATION	
B487	TJ14009	BRAKE,BAND	
B488	TJ14011	LEVER,MODE	
B489	TJ14012	RACK	
B490	TJ14013	RACK	
B491	TJ14014	GEAR,CAM	
B492	TJ14015	GEAR,MODE	
B493	TJ14016	GEAR,DRIVE	
B494	TJ14017	OPENER,DOOR	
B495	TJ14018	GEAR	
B496	TJ14019	GEAR	
B498	TJ14021	HOLDER,LEVER	
B499	TJ14022	HOLDER,LEVER	
B500	TJ14023	PULLEY	
B501	TJ14024	HOLDER,WORM	
B502	TJ14025	GEAR,CAM	
B504	TJ10229	WASHER	
B505	TJ14026	WASHER	
B506	TJ14027	CAP,INSULATION	
B507	TJ14028	WASHER	
B508	TJ14029	SPRING	
B509	TJ14031	HOLDER,MODE LEVER	
B511	TJ14032	SPRING	
B513	TJ14033	WASHER	
B514	TE13055	SCREW,SLIDER R	
B516	TJ14034	WASHER	
B517	TJ10229	WASHER	
B518	TJ10229	WASHER	
B519	TJ10229	WASHER	
B520	TJ14029	SPRING	
B521	TJ14036	SPRING	
B522	TJ14037	POST	
B523	TJ14038	POST	
B524	TJ14039	MOTOR	
B525	TJ14041	BELT	
B526	TJ14042	RING	
B530	TJ14043	SPACER	
B531	TJ14044	SCREW	
B532	TJ14045	HOLDER,JOINT	
B533	TJ14046	HOLDER,JOINT	
B534	TJ14047	RUBBER	
B540	TJ14048	WASHER	

SYMBOL NO	P-NO	DESCRIPTION
B541	TJ14034	WASHER
B550	TJ14051	SPRING
B551	TJ14052	ARM
B552	TJ14053	SPACER
B553	TJ14054	WASHER
L1051	TJ14055	SCREW (M2.6X6)
L1053	TJ14283	SCREW PRISM
L1081	TJ10176	SCREW (3X6)
L1101	TJ10176	SCREW (3X6)
L1114	TJ13454	SCREW (M2X6)
L1151	TJ10178	SCREW (M3X4)
L1191	TJ14284	SCREW (M2.6X10)
L1321	TJ14057	SCREW (M3X6)
L1341	TE13298	SCREW (M2.6X6)
L1342	TE13298	SCREW (M2.6X6)
L1406	TJ14058	SCREW (M2.6X4)
L1410	TJ10176	SCREW (M3X6)
L1450	TE12971	SCREW (M2.6X5)
L1460	TE13259	SCREW (M2.6X6)
L1461	TJ14061	SCREW (M2.6X6)
L1462	TJ14062	SCREW (M2.6X12)
L1463	TJ14063	SCREW (M2.6X4)
L1464	TJ14064	SCREW
L1465	TJ14063	SCREW (M2.6X4)
L1466	TJ10176	SCREW (3X6)
L1467	TJ10119	SCREW (3X10)
L1468	TJ13452	SCREW (M2.6X6)
L1469	TJ14066	SCREW (M2.6X6)
L1471	TJ14066	SCREW (M2.6X6)
L1475	TJ13452	SCREW (M2.6X6)
L1476	TJ14067	SCREW (2X14)
		ACCESSORIES
X1	TJ13878	REMOTE HAND SET
X3	TJ13879	CABLE,RF

ELECTRICAL PARTS LIST

Note: Although some parts in the schematic diagrams have different names from those in the parts list, there is no problem in replacing parts.

SYMBOL NO	P-NO	DESCRIPTION
		RESISTORS
VR501	TJ13934	CARBON FILM
		SEMI-CONDUCTORS
D001	TC10752	DIODE 1A5
D002	TC10752	DIODE 1A5
D003	TC10752	DIODE 1A5
D004	TC10752	DIODE 1A5
D005	TE13211	DIODE BA158
D006	TC10112	DIODE 1N4148M
D012	TC10791	RECTIFIER DIODE BA157
D013	TC10791	RECTIFIER DIODE BA157
D015	TC10757	DIODE RU2YX
D016	TC10877	DIODE SB140 [MX4530A]
D016	TJ14082	DIODE SB340 [FX6500A/FX6500AC]
D017	TC10791	RECTIFIER DIODE BA157
D018	TC10604	ZENER DIODE UZ-9.1BSC
D026	TC10607	ZENER DIODE MTZJT-7733D
D027	TC10112	DIODE 1N4148M
D028	TC10112	DIODE 1N4148M
D029	TC10112	DIODE 1N4148M
D031	TJ13895	ZENER DIODE MTZJT-775.6B
D052	TJ13919	ZENER DIODE NTZJT-771.B
D054	TC10752	DIODE 1A5 [MX4530A]
D055	TC10112	DIODE 1N4148M
D057	TJ13896	ZENER DIODE MTZJT-775.1C
D059	TJ13897	DIODE MTZJT-7722B
D301	TC10112	DIODE 1N4148M
D302	TC10112	DIODE 1N4148M
D303	TC10112	DIODE 1N4148M
D391	TC10112	DIODE 1N4148M
D507	TC10112	DIODE 1N4148M
D555	TJ13898	LED SIR-563ST3F
D701	TC10607	ZENER DIODE UZ-33BSD
D851	TJ13896	ZENER DIODE MTZJT-775.1C
⚠ IC001	TE13224	IC LTV-817B-F
IC301	TJ13902	IC LA71082M
IC451	TJ14083	IC LA72652M [FX6500A/FX6500AC]
IC501	TJ14084	IC M37765MAA1E0GP [MX4530A/FX6500A]
IC501	TJ14085	IC M37765MAA1D7GP [FX6500AC]
IC507	TJ13905	IC LB11880
⚠ Q001	TJ13922	TRANSISTOR 2SK2599
⚠ Q002	TE13243	TRANSISTOR KTC3199(BL)
Q029	TE13243	TRANSISTOR KTC3199(BL)
Q031	TC10778	TRANSISTOR KTC3199
Q052	TJ13923	TRANSISTOR KRC103M
Q055	TJ13924	TRANSISTOR 2SC536NF [MX4530A/FX6500A]
Q055	TE13235	TRANSISTOR KTC3203(Y) [FX6500AC]
Q056	TE13235	TRANSISTOR KTC3203(Y)
Q060	TJ13923	TRANSISTOR KRC103M
Q302	TJ13927	TRANSISTOR KTC3195(Y)
Q303	TJ13927	TRANSISTOR KTC3195(Y)
Q304	TJ13927	TRANSISTOR KTC3195(Y)
Q391	TC10784	TRANSISTOR KTA1266
Q421	TC10784	TRANSISTOR KTA1266
Q422	TE13235	TRANSISTOR KTC3203(Y)
Q423	TJ13924	TRANSISTOR 2SC536NF
Q424	TJ13924	TRANSISTOR 2SC536NF
Q425	TJ13923	TRANSISTOR KRC103M
Q501	TE13243	TRANSISTOR KTC3199(BL)
Q503	TJ13925	TRANSISTOR ST-304L-A
Q504	TJ13925	TRANSISTOR ST-304L-A
⚠ SA001	TC10891	SURGE ABSORBER ENC471D-10AC

SYMBOL NO	P-NO	DESCRIPTION
		TRANSFORMER
⚠ T001	TJ13932	TRANSFOMER
		COILS
⚠ L001	TJ13908	FILTER
L002	TA12047	BEAD CORE
L003	TA12554	BEAD CORE
L004	TA12554	BEAD CORE
L007	TA12554	BEAD CORE
L009	TJ13909	COIL 47UH
L251	5121289	COIL 22UH
L301	TJ13911	COIL 47UH
L302	5121289	COIL 22UH
L304	TA12561	INDUCTOR 100UH-K-26T
L306	TJ13912	COIL 2.2UH
L307	TJ13913	COIL 8.2UH
L309	TJ13914	COIL 68UH
L310	TA12554	BEAD CORE
L421	TJ13915	COIL 47UH
L502	TJ13916	COIL 47UH
L503	TA12561	INDUCTOR 100UH-K-26T
L504	TJ13909	COIL 47UH
L701	TA12561	INDUCTOR 100UH-K-26T
L702	TJ13909	COIL 47UH
L852	TJ13918	COIL 2.7UH
		CRYSTAL
X301	TE13247	CRISTAL
X501	TJ13935	CRYSTAL
X502	TA12551	CRYSTAL
		MISCELLANEOUS
CN251	TJ13889	CONNECTOR [MX4530A]
CN251	TJ13892	CONNECTOR [FX6500A/FX6500AC]
CN501	TJ13456	CONNECTOR
CN502	TJ13891	CONNECTOR
CN503	TE13006	CONNECTOR
CN504	TJ13892	CONNECTOR
CN507	TJ13893	CONNECTOR
CN651	TJ13936	CONNECTOR
CR001	TJ13894	GAP
⚠ F001	TE13223	FUSE 1A/250V
FH001	TE11948	HOLDER
FH002	TE11948	HOLDER
FIP502	TJ13901	FUSE
JK751	TE11951	JACK [MX4530A]
JK751	TJ14089	JACK [FX6500A/FX6500AC]
JK752	TE11951	JACK [MX4530A]
JK752	TJ14091	JACK [FX6500A/FX6500AC]
JK753	TJ13906	JACK
JK754	TJ13907	JACK [FX6500A/FX6500AC]
JK755	TJ13907	JACK [MX4530A]
JK755	TJ14092	JACK [FX6500A/FX6500AC]
PS501	TJ13921	PHOTO INTERRUPTER
RS501	TE13043	REMOTE RECEIVER
SW501	TE11957	SWITCH
SW502	TE11957	SWITCH
SW505	TE11957	SWITCH
SW506	TE11161	SWITCH
SW507	TJ13931	SWITCH
SW664	TE11957	SWITCH
SW691	TE11957	SWITCH

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
SW692	TE11957	SWITCH			
SW693	TE11957	SWITCH			
SW696	TE11957	SWITCH			
SW701	TE11942	SHIELD,AUDIO			
TU701	TJ13933	TUNER UNIT			

HITACHI

VT-FX6500A
VT-FX6500AC
VT-MX4530A

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